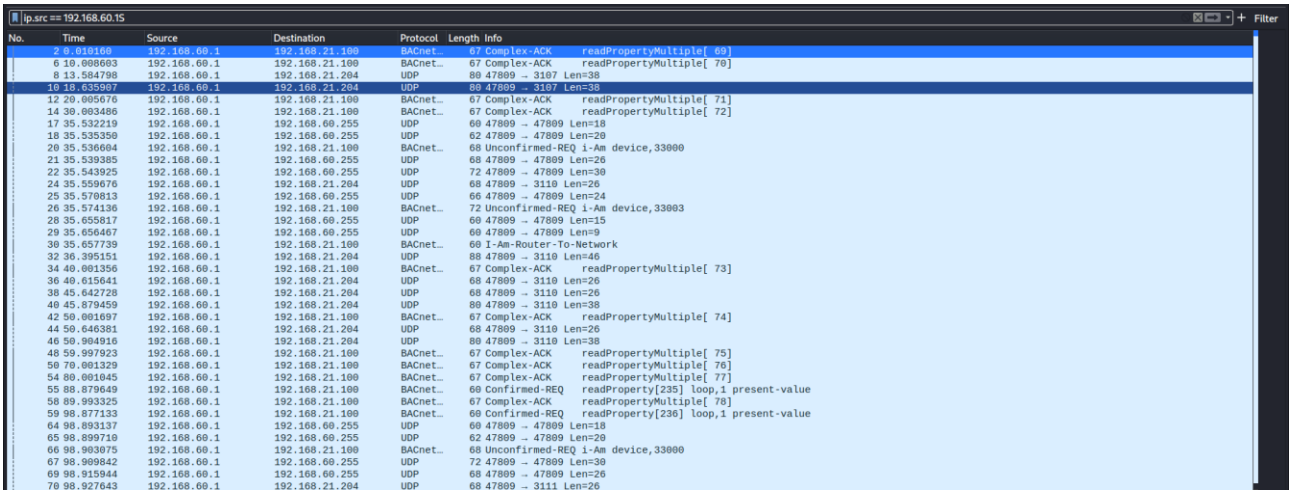
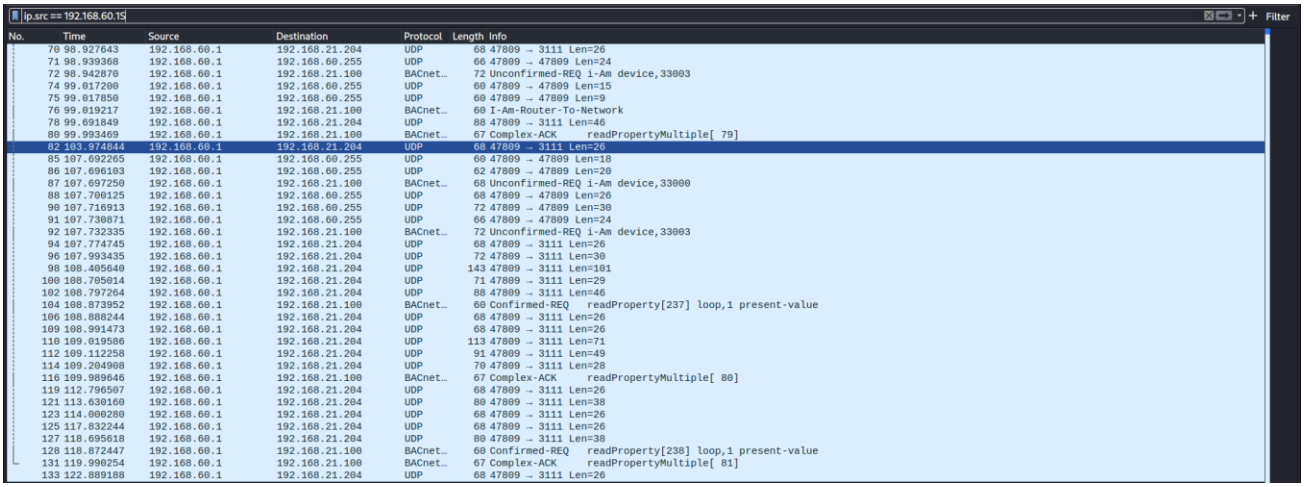
Scenario 1: Network Traffic Analysis

Task1.1: -



ip.src == 192.168.60.15

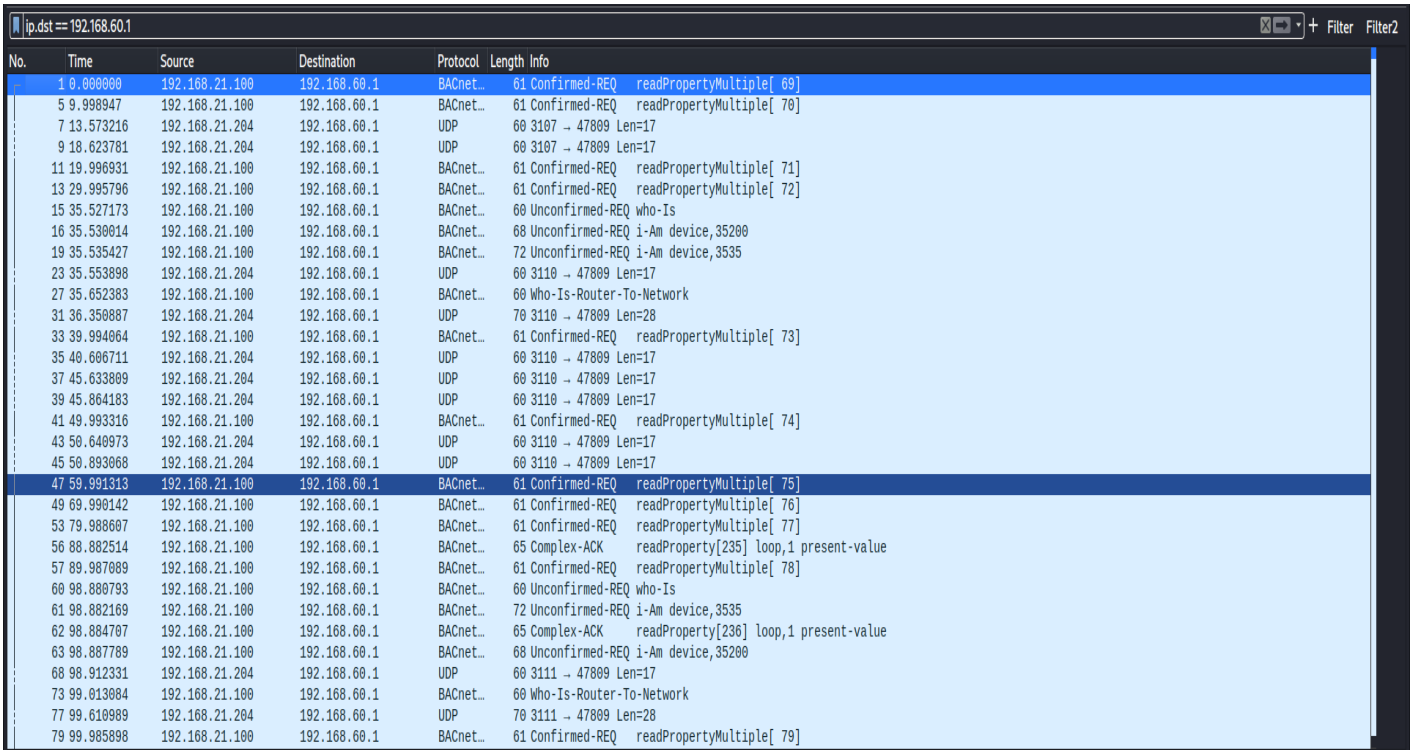
No.	Time	Source	Destination	Protocol	Length	Info
2	0.010160	192.168.60.1	192.168.21.100	BACnet…	67	Complex-ACK readPropertyMultiple[69]
6	10.008603	192.168.60.1	192.168.21.100	BACnet…	67	Complex-ACK readPropertyMultiple[70]
8	13.584798	192.168.60.1	192.168.21.204	UDP	80	47809 → 3107 Len=38
10	18.635907	192.168.60.1	192.168.21.204	UDP	80	47809 → 3107 Len=38
12	20.005676	192.168.60.1	192.168.21.100	BACnet…	67	Complex-ACK readPropertyMultiple[71]
14	30.003486	192.168.60.1	192.168.21.100	BACnet…	67	Complex-ACK readPropertyMultiple[72]
17	35.532219	192.168.60.1	192.168.60.255	UDP	60	47809 → 47809 Len=18
18	35.535350	192.168.60.1	192.168.60.255	UDP	62	47809 → 47809 Len=20
20	35.536604	192.168.60.1	192.168.21.100	BACnet…	68	Unconfirmed-REQ i-Am device,33000
21	35.539385	192.168.60.1	192.168.60.255	UDP	68	47809 → 47809 Len=26
22	35.543925	192.168.60.1	192.168.60.255	UDP	72	47809 → 47809 Len=30
24	35.559676	192.168.60.1	192.168.21.204	UDP	68	47809 → 3110 Len=26
25	35.570813	192.168.60.1	192.168.60.255	UDP	66	47809 → 47809 Len=24
26	35.574136	192.168.60.1	192.168.21.100	BACnet…	72	Unconfirmed-REQ i-Am device,33003
28	35.655817	192.168.60.1	192.168.60.255	UDP	60	47809 → 47809 Len=15
29	35.656467	192.168.60.1	192.168.60.255	UDP	60	47809 → 47809 Len=9
30	35.657739	192.168.60.1	192.168.21.100	BACnet…	60	I-Am-Router-To-Network
32	36.395151	192.168.60.1	192.168.21.204	UDP	88	47809 → 3110 Len=46
34	40.001356	192.168.60.1	192.168.21.100	BACnet…	67	Complex-ACK readPropertyMultiple[73]
36	40.615641	192.168.60.1	192.168.21.204	UDP	68	47809 → 3110 Len=26
38	45.642728	192.168.60.1	192.168.21.204	UDP	68	47809 → 3110 Len=26
40	45.879459	192.168.60.1	192.168.21.204	UDP	80	47809 → 3110 Len=38
42	50.001697	192.168.60.1	192.168.21.100	BACnet…	67	Complex-ACK readPropertyMultiple[74]
44	50.646381	192.168.60.1	192.168.21.204	UDP	68	47809 → 3110 Len=26
46	50.904916	192.168.60.1	192.168.21.204	UDP	80	47809 → 3110 Len=38
48	59.997923	192.168.60.1	192.168.21.100	BACnet…	67	Complex-ACK readPropertyMultiple[75]
50	70.001329	192.168.60.1	192.168.21.100	BACnet…	67	Complex-ACK readPropertyMultiple[76]
54	80.001045	192.168.60.1	192.168.21.100	BACnet…	67	Complex-ACK readPropertyMultiple[77]
55	88.879649	192.168.60.1	192.168.21.100	BACnet…	60	Confirmed-REQ readProperty[235] loop,1 present-value
58	89.993325	192.168.60.1	192.168.21.100	BACnet…	67	Complex-ACK readPropertyMultiple[78]
59	98.877133	192.168.60.1	192.168.21.100	BACnet…	60	Confirmed-REQ readProperty[236] loop,1 present-value
64	98.893137	192.168.60.1	192.168.60.255	UDP	60	47809 → 47809 Len=18
65	98.899710	192.168.60.1	192.168.60.255	UDP	62	47809 → 47809 Len=20
66	98.903075	192.168.60.1	192.168.21.100	BACnet…	68	Unconfirmed-REQ i-Am device,33000
67	98.909842	192.168.60.1	192.168.60.255	UDP	72	47809 → 47809 Len=30
69	98.915944	192.168.60.1	192.168.60.255	UDP	68	47809 → 47809 Len=26
70	98.927643	192.168.60.1	192.168.21.204	UDP	68	47809 → 3111 Len=26



ip.src == 192.168.60.15

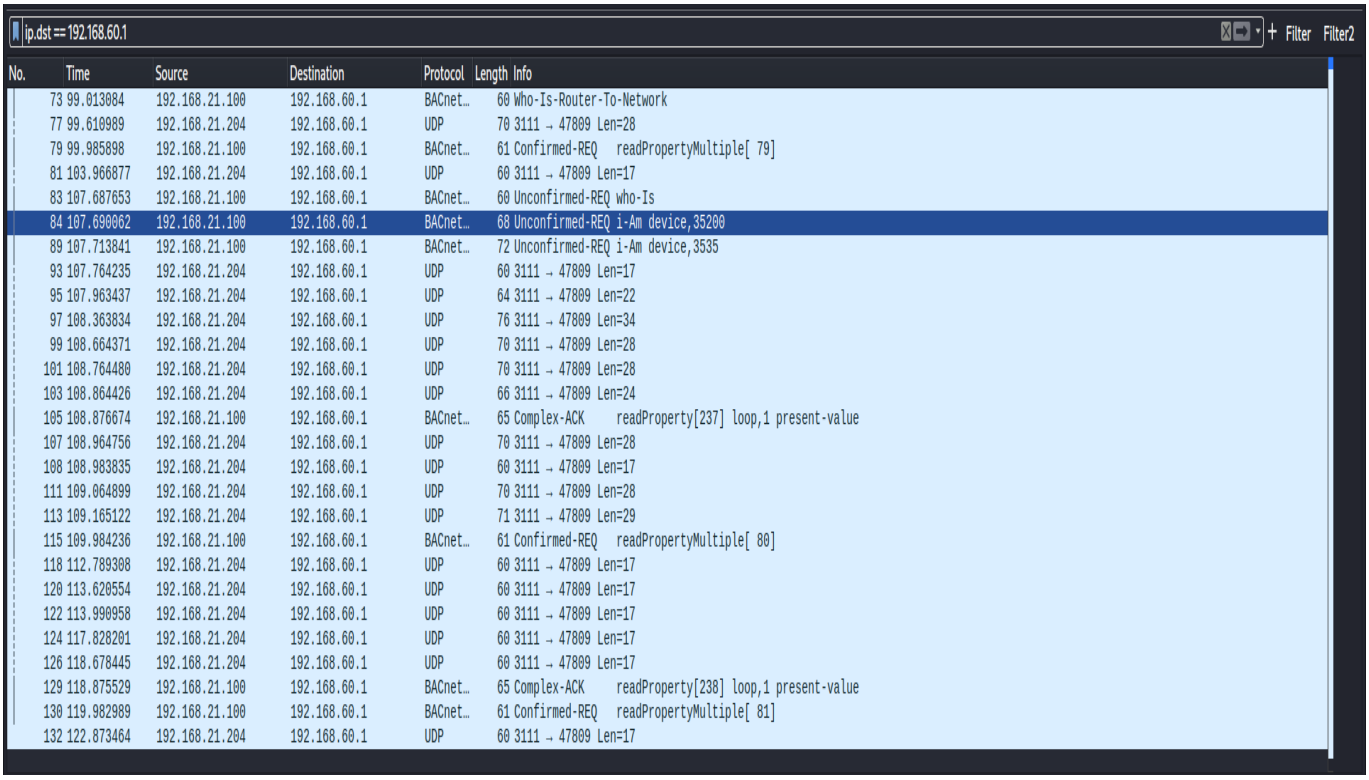
No.	Time	Source	Destination	Protocol	Length	Info
70	98.927643	192.168.60.1	192.168.21.204	UDP	68	47809 → 3111 Len=26
71	98.939368	192.168.60.1	192.168.60.255	UDP	66	47809 → 47809 Len=24
72	98.942870	192.168.60.1	192.168.21.100	BACnet…	72	Unconfirmed-REQ i-Am device,33003
74	99.017200	192.168.60.1	192.168.60.255	UDP	60	47809 → 47809 Len=15
75	99.017850	192.168.60.1	192.168.60.255	UDP	60	47809 → 47809 Len=9
76	99.019217	192.168.60.1	192.168.21.100	BACnet…	60	I-Am-Router-To-Network
78	99.691849	192.168.60.1	192.168.21.204	UDP	88	47809 → 3111 Len=46
80	99.993469	192.168.60.1	192.168.21.100	BACnet…	67	Complex-ACK readPropertyMultiple[79]
82	103.974844	192.168.60.1	192.168.21.204	UDP	68	47809 → 3111 Len=26
85	107.692265	192.168.60.1	192.168.60.255	UDP	60	47809 → 47809 Len=18
86	107.696103	192.168.60.1	192.168.60.255	UDP	62	47809 → 47809 Len=20
87	107.697250	192.168.60.1	192.168.21.100	BACnet…	68	Unconfirmed-REQ i-Am device,33000
88	107.700125	192.168.60.1	192.168.60.255	UDP	68	47809 → 47809 Len=26
90	107.716913	192.168.60.1	192.168.60.255	UDP	72	47809 → 47809 Len=30
91	107.730871	192.168.60.1	192.168.60.255	UDP	66	47809 → 47809 Len=24
92	107.732335	192.168.60.1	192.168.21.100	BACnet…	72	Unconfirmed-REQ i-Am device,33003
94	107.774745	192.168.60.1	192.168.21.204	UDP	68	47809 → 3111 Len=26
96	107.993435	192.168.60.1	192.168.21.204	UDP	72	47809 → 3111 Len=30
98	108.405640	192.168.60.1	192.168.21.204	UDP	143	47809 → 3111 Len=101
100	108.705014	192.168.60.1	192.168.21.204	UDP	71	47809 → 3111 Len=29
102	108.797264	192.168.60.1	192.168.21.204	UDP	88	47809 → 3111 Len=46
104	108.873952	192.168.60.1	192.168.21.100	BACnet…	60	Confirmed-REQ readProperty[237] loop,1 present-value
106	108.888244	192.168.60.1	192.168.21.204	UDP	68	47809 → 3111 Len=26
109	108.991473	192.168.60.1	192.168.21.204	UDP	68	47809 → 3111 Len=26
110	109.019586	192.168.60.1	192.168.21.204	UDP	113	47809 → 3111 Len=71
112	109.112258	192.168.60.1	192.168.21.204	UDP	91	47809 → 3111 Len=49
114	109.204908	192.168.60.1	192.168.21.204	UDP	70	47809 → 3111 Len=28
116	109.989646	192.168.60.1	192.168.21.100	BACnet…	67	Complex-ACK readPropertyMultiple[80]
119	112.796507	192.168.60.1	192.168.21.204	UDP	68	47809 → 3111 Len=26
121	113.630160	192.168.60.1	192.168.21.204	UDP	80	47809 → 3111 Len=38
123	114.000280	192.168.60.1	192.168.21.204	UDP	68	47809 → 3111 Len=26
125	117.832244	192.168.60.1	192.168.21.204	UDP	68	47809 → 3111 Len=26
127	118.695618	192.168.60.1	192.168.21.204	UDP	80	47809 → 3111 Len=38
128	118.872447	192.168.60.1	192.168.21.100	BACnet…	60	Confirmed-REQ readProperty[238] loop,1 present-value
131	119.990254	192.168.60.1	192.168.21.100	BACnet…	67	Complex-ACK readPropertyMultiple[81]
133	122.889188	192.168.60.1	192.168.21.204	UDP	68	47809 → 3111 Len=26

Task1.2: -



ip.dst == 192.168.60.1

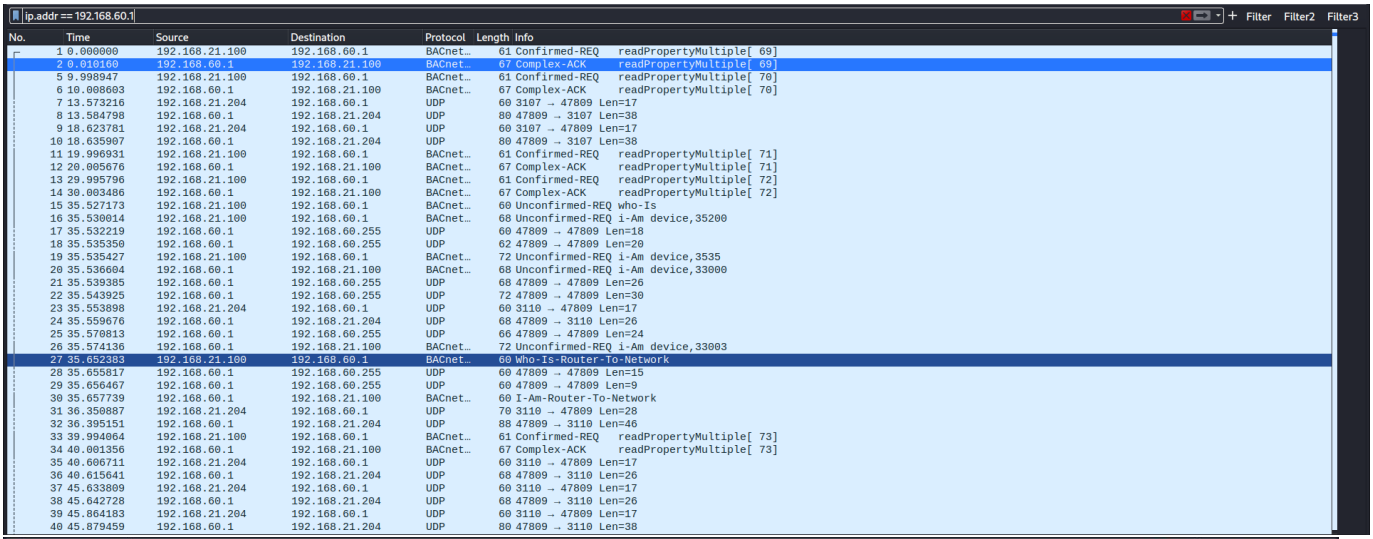
No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000	192.168.21.100	192.168.60.1	BACnet…	61	Confirmed-REQ readPropertyMultiple[69]
5	9.998947	192.168.21.100	192.168.60.1	BACnet…	61	Confirmed-REQ readPropertyMultiple[70]
7	13.573216	192.168.21.204	192.168.60.1	UDP	60	3107 → 47809 Len=17
9	18.623781	192.168.21.204	192.168.60.1	UDP	60	3107 → 47809 Len=17
11	19.996931	192.168.21.100	192.168.60.1	BACnet…	61	Confirmed-REQ readPropertyMultiple[71]
13	29.995796	192.168.21.100	192.168.60.1	BACnet…	61	Confirmed-REQ readPropertyMultiple[72]
15	35.527173	192.168.21.100	192.168.60.1	BACnet…	60	Unconfirmed-REQ who-Is
16	35.530014	192.168.21.100	192.168.60.1	BACnet…	68	Unconfirmed-REQ i-Am device,35200
19	35.535427	192.168.21.100	192.168.60.1	BACnet…	72	Unconfirmed-REQ i-Am device,3535
23	35.553898	192.168.21.204	192.168.60.1	UDP	60	3110 → 47809 Len=17
27	35.652383	192.168.21.100	192.168.60.1	BACnet…	60	Who-Is-Router-To-Network
31	36.350887	192.168.21.204	192.168.60.1	UDP	70	3110 → 47809 Len=28
33	39.994064	192.168.21.100	192.168.60.1	BACnet…	61	Confirmed-REQ readPropertyMultiple[73]
35	40.606711	192.168.21.204	192.168.60.1	UDP	60	3110 → 47809 Len=17
37	45.633809	192.168.21.204	192.168.60.1	UDP	60	3110 → 47809 Len=17
39	45.864183	192.168.21.204	192.168.60.1	UDP	60	3110 → 47809 Len=17
41	49.993316	192.168.21.100	192.168.60.1	BACnet…	61	Confirmed-REQ readPropertyMultiple[74]
43	50.640973	192.168.21.204	192.168.60.1	UDP	60	3110 → 47809 Len=17
45	50.893068	192.168.21.204	192.168.60.1	UDP	60	3110 → 47809 Len=17
47	59.991313	192.168.21.100	192.168.60.1	BACnet…	61	Confirmed-REQ readPropertyMultiple[75]
49	69.990142	192.168.21.100	192.168.60.1	BACnet…	61	Confirmed-REQ readPropertyMultiple[76]
53	79.988607	192.168.21.100	192.168.60.1	BACnet…	61	Confirmed-REQ readPropertyMultiple[77]
56	88.882514	192.168.21.100	192.168.60.1	BACnet…	65	Complex-ACK readProperty[235] loop,1 present-value
57	89.987089	192.168.21.100	192.168.60.1	BACnet…	61	Confirmed-REQ readPropertyMultiple[78]
60	98.880793	192.168.21.100	192.168.60.1	BACnet…	60	Unconfirmed-REQ who-Is
61	98.882169	192.168.21.100	192.168.60.1	BACnet…	72	Unconfirmed-REQ i-Am device,3535
62	98.884707	192.168.21.100	192.168.60.1	BACnet…	65	Complex-ACK readProperty[236] loop,1 present-value
63	98.887789	192.168.21.100	192.168.60.1	BACnet…	68	Unconfirmed-REQ i-Am device,35200
68	98.912331	192.168.21.204	192.168.60.1	UDP	60	3111 → 47809 Len=17
73	99.013084	192.168.21.100	192.168.60.1	BACnet…	60	Who-Is-Router-To-Network
77	99.610989	192.168.21.204	192.168.60.1	UDP	70	3111 → 47809 Len=28
79	99.985898	192.168.21.100	192.168.60.1	BACnet…	61	Confirmed-REQ readPropertyMultiple[79]



ip.dst == 192.168.60.1

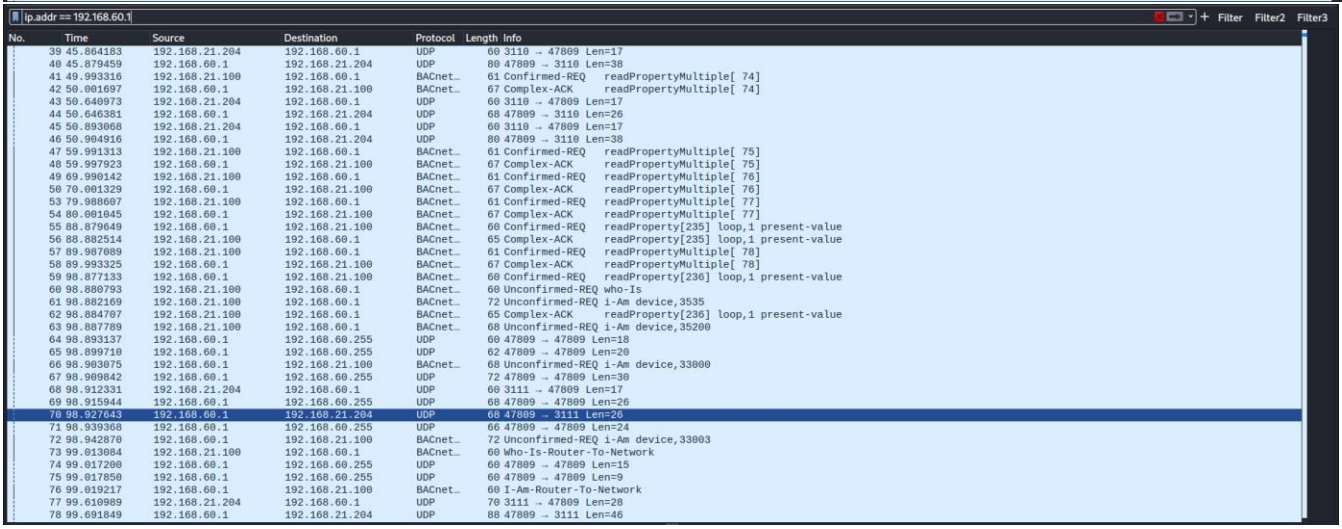
No.	Time	Source	Destination	Protocol	Length	Info
73	99.013084	192.168.21.100	192.168.60.1	BACnet…	60	Who-Is-Router-To-Network
77	99.610989	192.168.21.204	192.168.60.1	UDP	70	3111 → 47809 Len=28
79	99.985898	192.168.21.100	192.168.60.1	BACnet…	61	Confirmed-REQ readPropertyMultiple[79]
81	103.966877	192.168.21.204	192.168.60.1	UDP	60	3111 → 47809 Len=17
83	107.687653	192.168.21.100	192.168.60.1	BACnet…	60	Unconfirmed-REQ who-Is
84	107.690062	192.168.21.100	192.168.60.1	BACnet…	68	Unconfirmed-REQ i-Am device,35200
89	107.713841	192.168.21.100	192.168.60.1	BACnet…	72	Unconfirmed-REQ i-Am device,3535
93	107.764235	192.168.21.204	192.168.60.1	UDP	60	3111 → 47809 Len=17
95	107.963437	192.168.21.204	192.168.60.1	UDP	64	3111 → 47809 Len=22
97	108.363834	192.168.21.204	192.168.60.1	UDP	76	3111 → 47809 Len=34
99	108.664371	192.168.21.204	192.168.60.1	UDP	70	3111 → 47809 Len=28
101	108.764480	192.168.21.204	192.168.60.1	UDP	70	3111 → 47809 Len=28
103	108.864426	192.168.21.204	192.168.60.1	UDP	66	3111 → 47809 Len=24
105	108.876674	192.168.21.100	192.168.60.1	BACnet…	65	Complex-ACK readProperty[237] loop,1 present-value
107	108.964756	192.168.21.204	192.168.60.1	UDP	70	3111 → 47809 Len=28
108	108.983835	192.168.21.204	192.168.60.1	UDP	60	3111 → 47809 Len=17
111	109.064899	192.168.21.204	192.168.60.1	UDP	70	3111 → 47809 Len=28
113	109.165122	192.168.21.204	192.168.60.1	UDP	71	3111 → 47809 Len=29
115	109.984236	192.168.21.100	192.168.60.1	BACnet…	61	Confirmed-REQ readPropertyMultiple[80]
118	112.789308	192.168.21.204	192.168.60.1	UDP	60	3111 → 47809 Len=17
120	113.620554	192.168.21.204	192.168.60.1	UDP	60	3111 → 47809 Len=17
122	113.990958	192.168.21.204	192.168.60.1	UDP	60	3111 → 47809 Len=17
124	117.828201	192.168.21.204	192.168.60.1	UDP	60	3111 → 47809 Len=17
126	118.678445	192.168.21.204	192.168.60.1	UDP	60	3111 → 47809 Len=17
129	118.875529	192.168.21.100	192.168.60.1	BACnet…	65	Complex-ACK readProperty[238] loop,1 present-value
130	119.982989	192.168.21.100	192.168.60.1	BACnet…	61	Confirmed-REQ readPropertyMultiple[81]
132	122.873464	192.168.21.204	192.168.60.1	UDP	60	3111 → 47809 Len=17

Task1.3: -



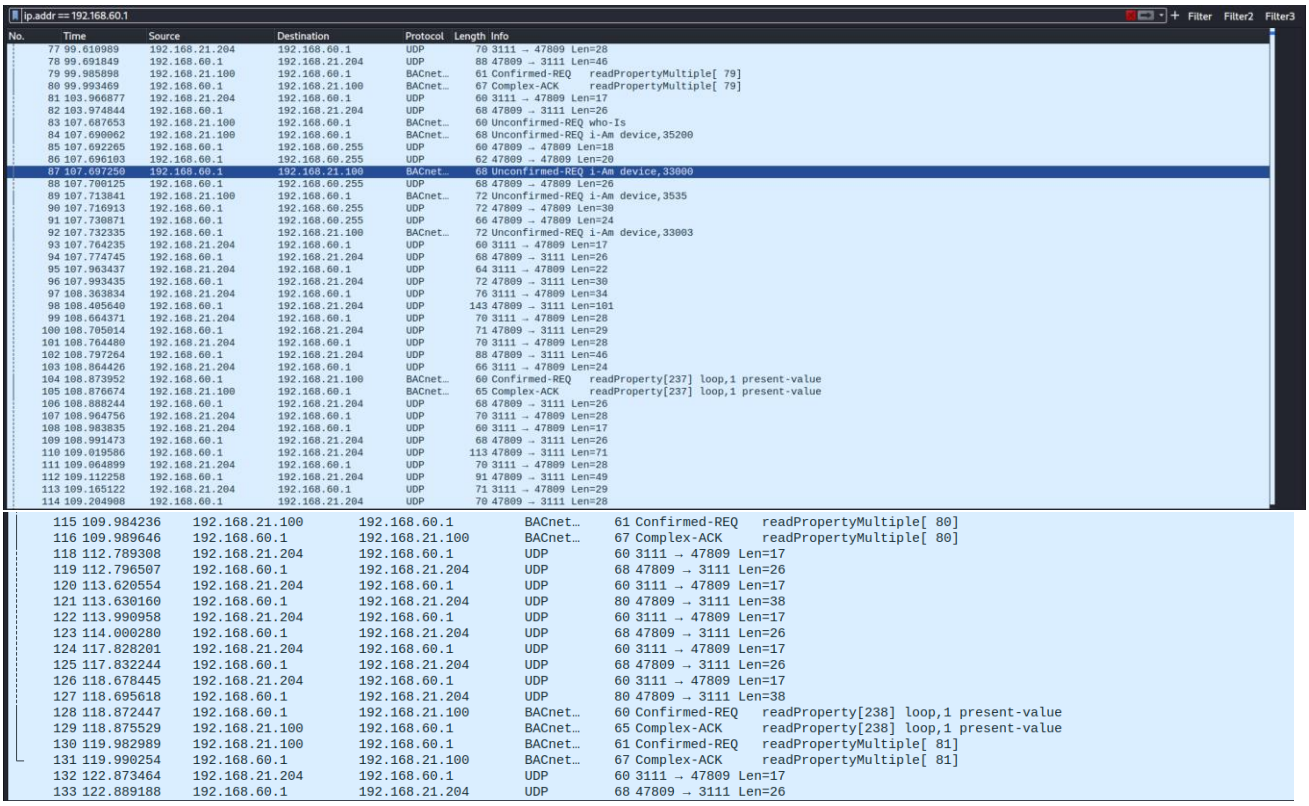
ip.addr == 192.168.60.1

No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000	192.168.21.100	192.168.60.1	BACnet…	61	Confirmed-REQ readPropertyMultiple[69]
2	0.010160	192.168.60.1	192.168.21.100	BACnet…	67	Complex-ACK readPropertyMultiple[69]
5	9.998947	192.168.21.100	192.168.60.1	BACnet…	61	Confirmed-REQ readPropertyMultiple[70]
6	10.008603	192.168.60.1	192.168.21.100	BACnet…	67	Complex-ACK readPropertyMultiple[70]
7	13.573216	192.168.21.204	192.168.60.1	UDP	60	3107 → 47809 Len=17
8	13.584798	192.168.60.1	192.168.21.204	UDP	80	47809 → 3107 Len=38
9	18.623781	192.168.21.204	192.168.60.1	UDP	60	3107 → 47809 Len=17
10	18.635907	192.168.60.1	192.168.21.204	UDP	80	47809 → 3107 Len=38
11	19.996931	192.168.21.100	192.168.60.1	BACnet…	61	Confirmed-REQ readPropertyMultiple[71]
12	20.005676	192.168.60.1	192.168.21.100	BACnet…	67	Complex-ACK readPropertyMultiple[71]
13	29.995796	192.168.21.100	192.168.60.1	BACnet…	61	Confirmed-REQ readPropertyMultiple[72]
14	30.003486	192.168.60.1	192.168.21.100	BACnet…	67	Complex-ACK readPropertyMultiple[72]
15	35.527173	192.168.21.100	192.168.60.1	BACnet…	60	Unconfirmed-REQ who-Is
16	35.530014	192.168.21.100	192.168.60.1	BACnet…	68	Unconfirmed-REQ i-Am device,35200
17	35.532219	192.168.60.1	192.168.60.255	UDP	60	47809 → 47809 Len=18
18	35.535350	192.168.60.1	192.168.60.255	UDP	62	47809 → 47809 Len=20
19	35.535427	192.168.21.100	192.168.60.1	BACnet…	72	Unconfirmed-REQ i-Am device,3535
20	35.536604	192.168.60.1	192.168.21.100	BACnet…	68	Unconfirmed-REQ i-Am device,33000
21	35.539385	192.168.60.1	192.168.60.255	UDP	68	47809 → 47809 Len=26
22	35.543925	192.168.60.1	192.168.60.255	UDP	72	47809 → 47809 Len=30
23	35.553898	192.168.21.204	192.168.60.1	UDP	60	3110 → 47809 Len=17
24	35.559676	192.168.60.1	192.168.21.204	UDP	68	47809 → 3110 Len=26
25	35.570813	192.168.60.1	192.168.60.255	UDP	66	47809 → 47809 Len=24
26	35.574136	192.168.60.1	192.168.21.100	BACnet…	72	Unconfirmed-REQ i-Am device,33003
27	35.652383	192.168.21.100	192.168.60.1	BACnet…	60	Who-Is-Router-To-Network
28	35.655817	192.168.60.1	192.168.60.255	UDP	60	47809 → 47809 Len=15
29	35.656467	192.168.60.1	192.168.60.255	UDP	60	47809 → 47809 Len=9
30	35.657739	192.168.60.1	192.168.21.100	BACnet…	60	I-Am-Router-To-Network
31	36.350887	192.168.21.204	192.168.60.1	UDP	70	3110 → 47809 Len=28
32	36.395151	192.168.60.1	192.168.21.204	UDP	88	47809 → 3110 Len=46
33	39.994064	192.168.21.100	192.168.60.1	BACnet…	61	Confirmed-REQ readPropertyMultiple[73]
34	40.001356	192.168.60.1	192.168.21.100	BACnet…	67	Complex-ACK readPropertyMultiple[73]
35	40.606711	192.168.21.204	192.168.60.1	UDP	60	3110 → 47809 Len=17
36	40.615641	192.168.60.1	192.168.21.204	UDP	68	47809 → 3110 Len=26
37	45.633809	192.168.21.204	192.168.60.1	UDP	60	3110 → 47809 Len=17
38	45.642728	192.168.60.1	192.168.21.204	UDP	68	47809 → 3110 Len=26
39	45.864183	192.168.21.204	192.168.60.1	UDP	60	3110 → 47809 Len=17
40	45.879459	192.168.60.1	192.168.21.204	UDP	80	47809 → 3110 Len=38



ip.addr == 192.168.60.1

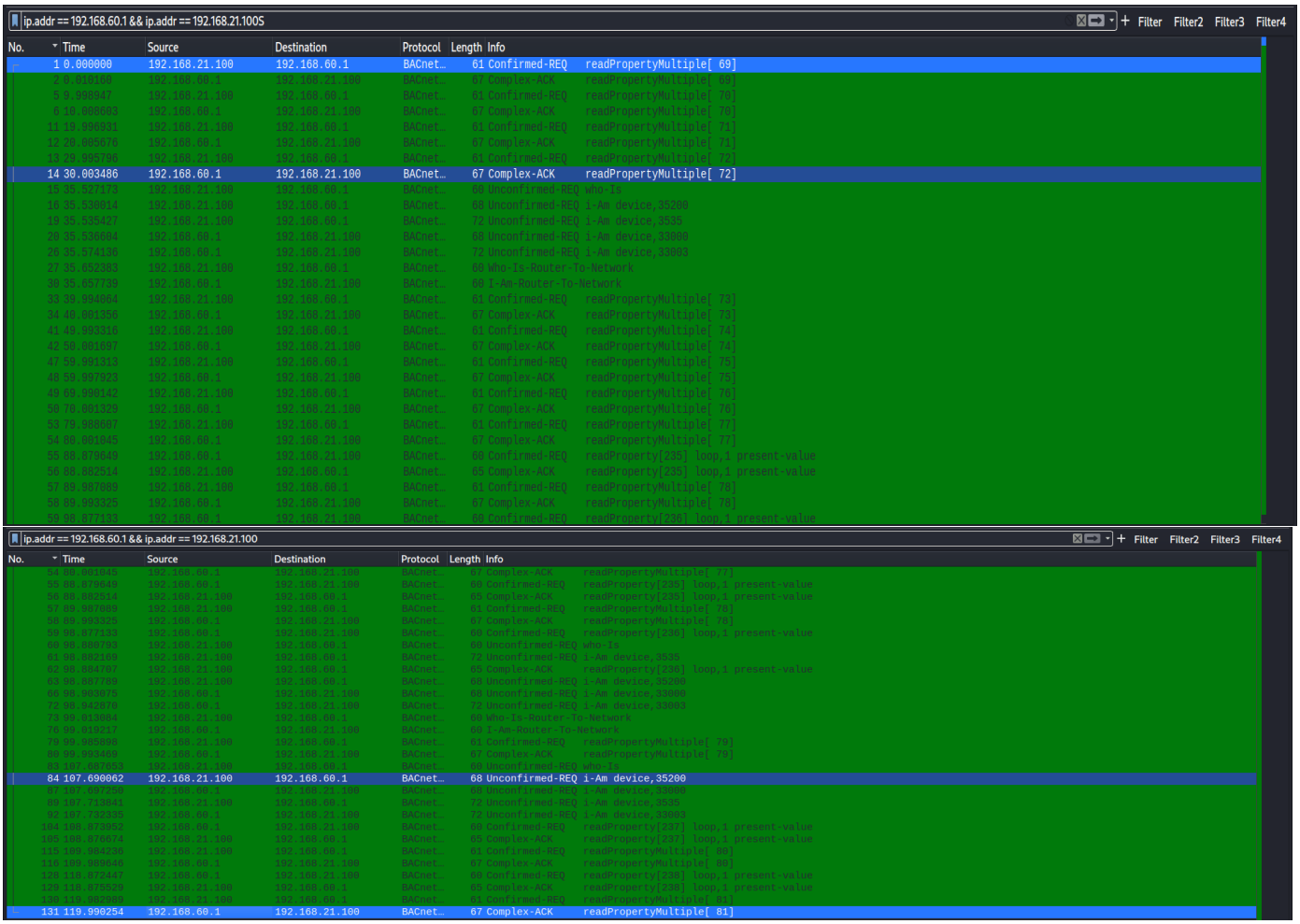
No.	Time	Source	Destination	Protocol	Length	Info
39	45.864183	192.168.21.204	192.168.60.1	UDP	60	3110 → 47809 Len=17
40	45.879459	192.168.60.1	192.168.21.204	UDP	80	47809 → 3110 Len=38
41	49.993316	192.168.21.100	192.168.60.1	BACnet…	61	Confirmed-REQ readPropertyMultiple[74]
42	50.001697	192.168.60.1	192.168.21.100	BACnet…	67	Complex-ACK readPropertyMultiple[74]
43	50.640973	192.168.21.204	192.168.60.1	UDP	60	3110 → 47809 Len=17
44	50.646381	192.168.60.1	192.168.21.204	UDP	68	47809 → 3110 Len=26
45	50.893068	192.168.21.204	192.168.60.1	UDP	60	3110 → 47809 Len=17
46	50.904916	192.168.60.1	192.168.21.204	UDP	80	47809 → 3110 Len=38
47	59.991313	192.168.21.100	192.168.60.1	BACnet…	61	Confirmed-REQ readPropertyMultiple[75]
48	59.997923	192.168.60.1	192.168.21.100	BACnet…	67	Complex-ACK readPropertyMultiple[75]
49	69.990142	192.168.21.100	192.168.60.1	BACnet…	61	Confirmed-REQ readPropertyMultiple[76]
50	70.001329	192.168.60.1	192.168.21.100	BACnet…	67	Complex-ACK readPropertyMultiple[76]
53	79.988607	192.168.21.100	192.168.60.1	BACnet…	61	Confirmed-REQ readPropertyMultiple[77]
54	80.001045	192.168.60.1	192.168.21.100	BACnet…	67	Complex-ACK readPropertyMultiple[77]
55	88.879649	192.168.60.1	192.168.21.100	BACnet…	60	Confirmed-REQ readProperty[235] loop,1 present-value
56	88.882514	192.168.21.100	192.168.60.1	BACnet…	65	Complex-ACK readProperty[235] loop,1 present-value
57	89.987089	192.168.21.100	192.168.60.1	BACnet…	61	Confirmed-REQ readPropertyMultiple[78]
58	89.993325	192.168.60.1	192.168.21.100	BACnet…	67	Complex-ACK readPropertyMultiple[78]
59	98.877133	192.168.60.1	192.168.21.100	BACnet…	60	Confirmed-REQ readProperty[236] loop,1 present-value
60	98.880793	192.168.21.100	192.168.60.1	BACnet…	60	Unconfirmed-REQ who-Is
61	98.882160	192.168.21.100	192.168.60.1	BACnet…	72	Unconfirmed-REQ i-Am device,3535
62	98.884707	192.168.21.100	192.168.60.1	BACnet…	65	Complex-ACK readProperty[236] loop,1 present-value
63	98.887789	192.168.21.100	192.168.60.1	BACnet…	68	Unconfirmed-REQ i-Am device,35200
64	98.893137	192.168.60.1	192.168.60.255	UDP	60	47809 → 47809 Len=18
65	98.899710	192.168.60.1	192.168.60.255	UDP	62	47809 → 47809 Len=20
66	98.903075	192.168.60.1	192.168.21.100	BACnet…	68	Unconfirmed-REQ i-Am device,33000
67	98.909842	192.168.60.1	192.168.60.255	UDP	72	47809 → 47809 Len=30
68	98.912331	192.168.21.204	192.168.60.1	UDP	60	3111 → 47809 Len=17
69	98.915944	192.168.60.1	192.168.60.255	UDP	68	47809 → 47809 Len=26
70	98.927643	192.168.60.1	192.168.21.204	UDP	68	47809 → 3111 Len=26
71	98.939368	192.168.60.1	192.168.60.255	UDP	66	47809 → 47809 Len=24
72	98.942870	192.168.60.1	192.168.21.100	BACnet…	72	Unconfirmed-REQ i-Am device,33003
73	99.013084	192.168.21.100	192.168.60.1	BACnet…	60	Who-Is-Router-To-Network
74	99.017200	192.168.60.1	192.168.60.255	UDP	60	47809 → 47809 Len=15
75	99.017850	192.168.60.1	192.168.60.255	UDP	60	47809 → 47809 Len=9
76	99.019217	192.168.60.1	192.168.21.100	BACnet…	60	I-Am-Router-To-Network
77	99.610989	192.168.21.204	192.168.60.1	UDP	70	3111 → 47809 Len=28
78	99.691849	192.168.60.1	192.168.21.204	UDP	88	47809 → 3111 Len=46



ip.addr == 192.168.60.1

No.	Time	Source	Destination	Protocol	Length	Info
77	99.610989	192.168.21.204	192.168.60.1	UDP	70	3111 → 47809 Len=28
78	99.691849	192.168.60.1	192.168.21.204	UDP	88	47809 → 3111 Len=46
79	99.985898	192.168.21.100	192.168.60.1	BACnet…	61	Confirmed-REQ readPropertyMultiple[79]
80	99.993469	192.168.60.1	192.168.21.100	BACnet…	67	Complex-ACK readPropertyMultiple[79]
81	103.966877	192.168.21.204	192.168.60.1	UDP	60	3111 → 47809 Len=17
82	103.974844	192.168.60.1	192.168.21.204	UDP	68	47809 → 3111 Len=26
83	107.687653	192.168.21.100	192.168.60.1	BACnet…	60	Unconfirmed-REQ who-Is
84	107.690062	192.168.21.100	192.168.60.1	BACnet…	68	Unconfirmed-REQ i-Am device,35200
85	107.692265	192.168.60.1	192.168.60.255	UDP	60	47809 → 47809 Len=18
86	107.696103	192.168.60.1	192.168.60.255	UDP	62	47809 → 47809 Len=20
87	107.697250	192.168.60.1	192.168.21.100	BACnet…	68	Unconfirmed-REQ i-Am device,33000
88	107.700125	192.168.60.1	192.168.60.255	UDP	68	47809 → 47809 Len=26
89	107.713841	192.168.21.100	192.168.60.1	BACnet…	72	Unconfirmed-REQ i-Am device,3535
90	107.716913	192.168.60.1	192.168.60.255	UDP	72	47809 → 47809 Len=30
91	107.730871	192.168.60.1	192.168.60.255	UDP	66	47809 → 47809 Len=24
92	107.732335	192.168.60.1	192.168.21.100	BACnet…	72	Unconfirmed-REQ i-Am device,33003
93	107.764235	192.168.21.204	192.168.60.1	UDP	60	3111 → 47809 Len=17
94	107.774745	192.168.60.1	192.168.21.204	UDP	68	47809 → 3111 Len=26
95	107.963437	192.168.21.204	192.168.60.1	UDP	64	3111 → 47809 Len=22
96	107.993435	192.168.60.1	192.168.21.204	UDP	72	47809 → 3111 Len=30
97	108.363834	192.168.21.204	192.168.60.1	UDP	76	3111 → 47809 Len=34
98	108.405640	192.168.60.1	192.168.21.204	UDP	143	47809 → 3111 Len=101
99	108.664371	192.168.21.204	192.168.60.1	UDP	70	3111 → 47809 Len=28
100	108.705014	192.168.60.1	192.168.21.204	UDP	71	47809 → 3111 Len=29
101	108.764480	192.168.21.204	192.168.60.1	UDP	70	3111 → 47809 Len=28
102	108.797264	192.168.60.1	192.168.21.204	UDP	88	47809 → 3111 Len=46
103	108.864426	192.168.21.204	192.168.60.1	UDP	66	3111 → 47809 Len=24
104	108.873952	192.168.60.1	192.168.21.100	BACnet…	60	Confirmed-REQ readProperty[237] loop,1 present-value
105	108.876674	192.168.21.100	192.168.60.1	BACnet…	65	Complex-ACK readProperty[237] loop,1 present-value
106	108.888244	192.168.60.1	192.168.21.204	UDP	68	47809 → 3111 Len=26
107	108.964756	192.168.21.204	192.168.60.1	UDP	70	3111 → 47809 Len=28
108	108.983835	192.168.21.204	192.168.60.1	UDP	60	3111 → 47809 Len=17
109	108.991473	192.168.60.1	192.168.21.204	UDP	68	47809 → 3111 Len=26
110	109.019586	192.168.60.1	192.168.21.204	UDP	113	47809 → 3111 Len=71
111	109.064899	192.168.21.204	192.168.60.1	UDP	70	3111 → 47809 Len=28
112	109.112258	192.168.60.1	192.168.21.204	UDP	91	47809 → 3111 Len=49
113	109.165122	192.168.21.204	192.168.60.1	UDP	71	3111 → 47809 Len=29
114	109.204908	192.168.60.1	192.168.21.204	UDP	70	47809 → 3111 Len=28
115	109.984236	192.168.21.100	192.168.60.1	BACnet…	61	Confirmed-REQ readPropertyMultiple[80]
116	109.989646	192.168.60.1	192.168.21.100	BACnet…	67	Complex-ACK readPropertyMultiple[80]
118	112.789308	192.168.21.204	192.168.60.1	UDP	60	3111 → 47809 Len=17
119	112.796507	192.168.60.1	192.168.21.204	UDP	68	47809 → 3111 Len=26
120	113.620554	192.168.21.204	192.168.60.1	UDP	60	3111 → 47809 Len=17
121	113.630160	192.168.60.1	192.168.21.204	UDP	80	47809 → 3111 Len=38
122	113.990958	192.168.21.204	192.168.60.1	UDP	60	3111 → 47809 Len=17
123	114.000280	192.168.60.1	192.168.21.204	UDP	68	47809 → 3111 Len=26
124	117.828201	192.168.21.204	192.168.60.1	UDP	60	3111 → 47809 Len=17
125	117.832244	192.168.60.1	192.168.21.204	UDP	68	47809 → 3111 Len=26
126	118.678445	192.168.21.204	192.168.60.1	UDP	60	3111 → 47809 Len=17
127	118.695618	192.168.60.1	192.168.21.204	UDP	80	47809 → 3111 Len=38
128	118.872447	192.168.60.1	192.168.21.100	BACnet…	60	Confirmed-REQ readProperty[238] loop,1 present-value
129	118.875529	192.168.21.100	192.168.60.1	BACnet…	65	Complex-ACK readProperty[238] loop,1 present-value
130	119.982989	192.168.21.100	192.168.60.1	BACnet…	61	Confirmed-REQ readPropertyMultiple[81]
131	119.990254	192.168.60.1	192.168.21.100	BACnet…	67	Complex-ACK readPropertyMultiple[81]
132	122.873464	192.168.21.204	192.168.60.1	UDP	60	3111 → 47809 Len=17
133	122.889188	192.168.60.1	192.168.21.204	UDP	68	47809 → 3111 Len=26

Task1.4: -


ip.addr == 192.168.60.1 && ip.addr == 192.168.21.100S
Filter
Filter2
Filter3
Filter4
No. Time Source Destination Protocol Length Info
1 0.000000 192.168.21.100 192.168.60.1 BACnet… 61 Confirmed-REQ readPropertyMultiple[69]
2 0.010168 192.168.60.1 192.168.21.100 BACnet… 67 Complex-ACK readPropertyMultiple[69]
5 9.990847 192.168.21.100 192.168.60.1 BACnet… 61 Confirmed-REQ readPropertyMultiple[70]
6 10.000603 192.168.60.1 192.168.21.100 BACnet… 67 Complex-ACK readPropertyMultiple[70]
11 19.986931 192.168.21.100 192.168.60.1 BACnet… 61 Confirmed-REQ readPropertyMultiple[71]
12 20.005676 192.168.60.1 192.168.21.100 BACnet… 67 Complex-ACK readPropertyMultiple[71]
13 29.995796 192.168.21.100 192.168.60.1 BACnet… 61 Confirmed-REQ readPropertyMultiple[72]
14 30.003486 192.168.60.1 192.168.21.100 BACnet… 67 Complex-ACK readPropertyMultiple[72]
15 35.527173 192.168.21.100 192.168.60.1 BACnet… 60 Unconfirmed-REQ who-Is
16 35.530014 192.168.21.100 192.168.60.1 BACnet… 68 Unconfirmed-REQ i-Am device,35200
19 35.535427 192.168.21.100 192.168.60.1 BACnet… 72 Unconfirmed-REQ i-Am device,3535
20 35.536604 192.168.60.1 192.168.21.100 BACnet… 68 Unconfirmed-REQ i-Am device,33000
26 35.574136 192.168.60.1 192.168.21.100 BACnet… 72 Unconfirmed-REQ i-Am device,33003
27 35.652383 192.168.21.100 192.168.60.1 BACnet… 60 Who-Is-Router-To-Network
30 35.657739 192.168.60.1 192.168.21.100 BACnet… 60 I-Am-Router-To-Network
33 39.994064 192.168.21.100 192.168.60.1 BACnet… 61 Confirmed-REQ readPropertyMultiple[73]
34 40.001356 192.168.60.1 192.168.21.100 BACnet… 67 Complex-ACK readPropertyMultiple[73]
41 49.993316 192.168.21.100 192.168.60.1 BACnet… 61 Confirmed-REQ readPropertyMultiple[74]
42 50.001697 192.168.60.1 192.168.21.100 BACnet… 67 Complex-ACK readPropertyMultiple[74]
47 59.991313 192.168.21.100 192.168.60.1 BACnet… 61 Confirmed-REQ readPropertyMultiple[75]
48 59.997923 192.168.60.1 192.168.21.100 BACnet… 67 Complex-ACK readPropertyMultiple[75]
49 69.990142 192.168.21.100 192.168.60.1 BACnet… 61 Confirmed-REQ readPropertyMultiple[76]
50 70.001329 192.168.60.1 192.168.21.100 BACnet… 67 Complex-ACK readPropertyMultiple[76]
53 79.986867 192.168.21.100 192.168.60.1 BACnet… 61 Confirmed-REQ readPropertyMultiple[77]
54 80.001045 192.168.60.1 192.168.21.100 BACnet… 67 Complex-ACK readPropertyMultiple[77]
55 80.879049 192.168.60.1 192.168.21.100 BACnet… 60 Confirmed-REQ readProperty[235] loop,1 present-value
56 80.882514 192.168.21.100 192.168.60.1 BACnet… 65 Complex-ACK readProperty[235] loop,1 present-value
57 89.987089 192.168.21.100 192.168.60.1 BACnet… 61 Confirmed-REQ readPropertyMultiple[78]
58 89.993325 192.168.60.1 192.168.21.100 BACnet… 67 Complex-ACK readPropertyMultiple[78]
59 90.877133 192.168.60.1 192.168.21.100 BACnet… 60 Confirmed-REQ readProperty[236] loop,1 present-value

ip.addr == 192.168.60.1 && ip.addr == 192.168.21.100
Filter
Filter2
Filter3
Filter4
No. Time Source Destination Protocol Length Info
54 80.001045 192.168.60.1 192.168.21.100 BACnet… 67 Complex-ACK readPropertyMultiple[77]
55 80.879049 192.168.60.1 192.168.21.100 BACnet… 60 Confirmed-REQ readProperty[235] loop,1 present-value
56 80.882514 192.168.21.100 192.168.60.1 BACnet… 65 Complex-ACK readProperty[235] loop,1 present-value
57 89.987089 192.168.21.100 192.168.60.1 BACnet… 61 Confirmed-REQ readPropertyMultiple[78]
58 89.993325 192.168.60.1 192.168.21.100 BACnet… 67 Complex-ACK readPropertyMultiple[78]
59 90.877133 192.168.60.1 192.168.21.100 BACnet… 60 Confirmed-REQ readProperty[236] loop,1 present-value
60 90.880793 192.168.21.100 192.168.60.1 BACnet… 60 Unconfirmed-REQ who-Is
61 90.882169 192.168.21.100 192.168.60.1 BACnet… 72 Unconfirmed-REQ i-Am device,3535
62 90.884707 192.168.21.100 192.168.60.1 BACnet… 65 Complex-ACK readProperty[236] loop,1 present-value
63 90.887789 192.168.21.100 192.168.60.1 BACnet… 68 Unconfirmed-REQ i-Am device,35200
66 90.903075 192.168.60.1 192.168.21.100 BACnet… 68 Unconfirmed-REQ i-Am device,33000
72 90.942870 192.168.60.1 192.168.21.100 BACnet… 72 Unconfirmed-REQ i-Am device,33003
73 99.013084 192.168.21.100 192.168.60.1 BACnet… 60 Who-Is-Router-To-Network
76 99.018217 192.168.60.1 192.168.21.100 BACnet… 60 I-Am-Router-To-Network
79 99.985898 192.168.21.100 192.168.60.1 BACnet… 61 Confirmed-REQ readPropertyMultiple[79]
80 99.993460 192.168.60.1 192.168.21.100 BACnet… 67 Complex-ACK readPropertyMultiple[79]
83 107.687683 192.168.21.100 192.168.60.1 BACnet… 60 Unconfirmed-REQ who-Is
84 107.690062 192.168.21.100 192.168.60.1 BACnet… 68 Unconfirmed-REQ i-Am device,35200
87 107.709541 192.168.60.1 192.168.21.100 BACnet… 68 Unconfirmed-REQ i-Am device,33000
89 107.713041 192.168.21.100 192.168.60.1 BACnet… 72 Unconfirmed-REQ i-Am device,3535
92 107.732335 192.168.60.1 192.168.21.100 BACnet… 72 Unconfirmed-REQ i-Am device,33003
104 108.873952 192.168.60.1 192.168.21.100 BACnet… 60 Confirmed-REQ readProperty[237] loop,1 present-value
105 108.876674 192.168.21.100 192.168.60.1 BACnet… 65 Complex-ACK readProperty[237] loop,1 present-value
115 109.984236 192.168.21.100 192.168.60.1 BACnet… 61 Confirmed-REQ readPropertyMultiple[80]
116 109.989648 192.168.60.1 192.168.21.100 BACnet… 67 Complex-ACK readPropertyMultiple[80]
128 118.872447 192.168.60.1 192.168.21.100 BACnet… 60 Confirmed-REQ readProperty[238] loop,1 present-value
129 118.875529 192.168.21.100 192.168.60.1 BACnet… 65 Complex-ACK readProperty[238] loop,1 present-value
131 119.990254 192.168.60.1 192.168.21.100 BACnet… 67 Complex-ACK readPropertyMultiple[81]

Scenario 2- VoIP Security Analysis

Task 2.1: -

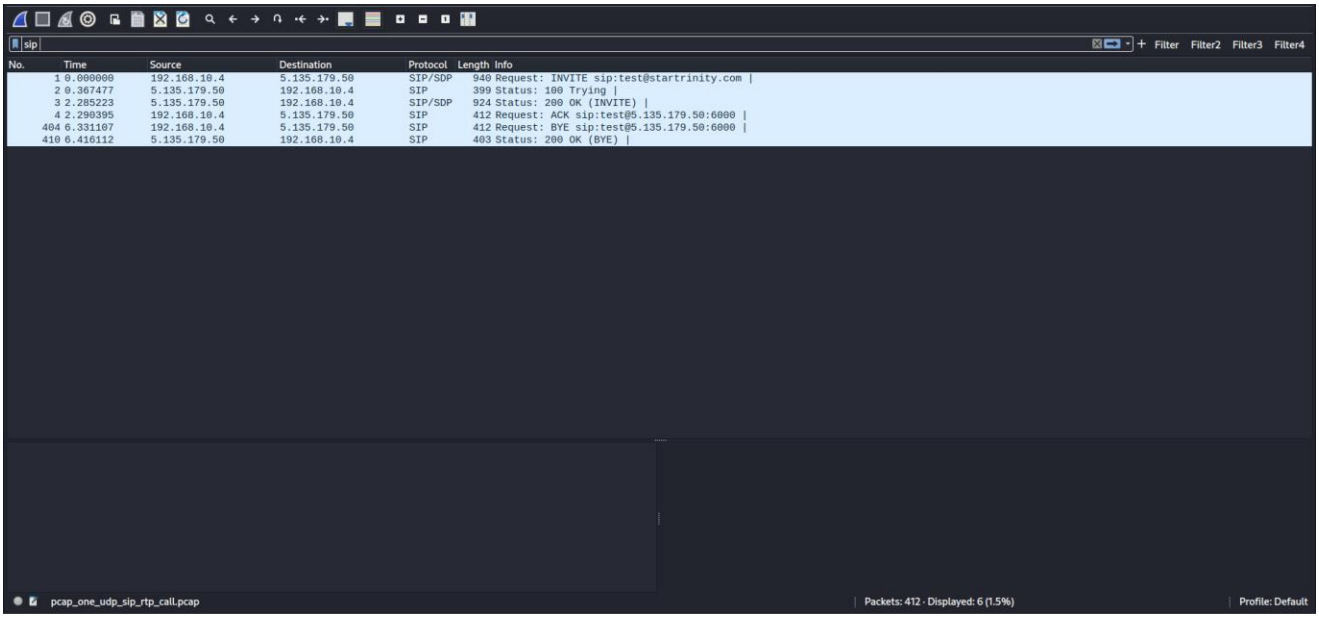
Common VoIP issues include:

1. Network Congestion: High network traffic leading to call quality degradation or drops.
2. Jitter and Latency: Inconsistent packet arrival times causing audio quality issues.
3. Packet Loss: Missing packets can result in call drops or poor audio quality.
4. Codec Mismatch: Incompatibility between codecs can lead to audio issues.

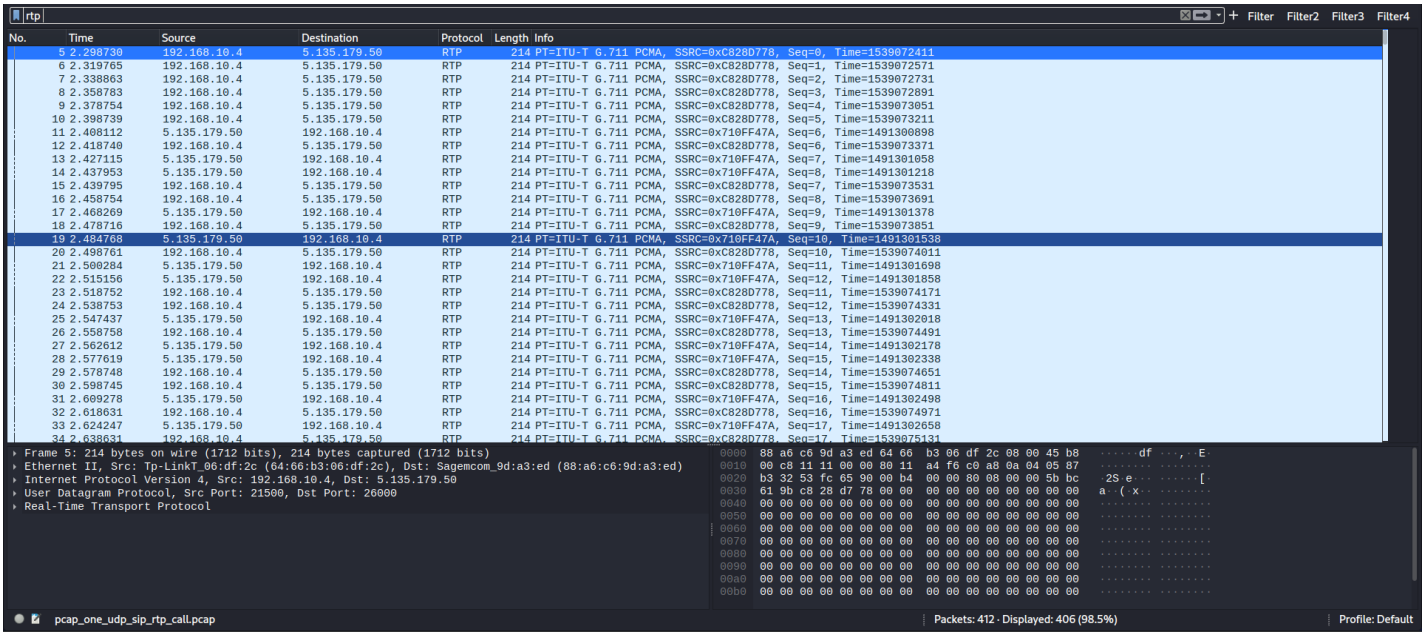
Identified Issue in this Scenario:

Frequent call drops suggest potential issues with network congestion, packet loss, or jitter.

Task2.2: -

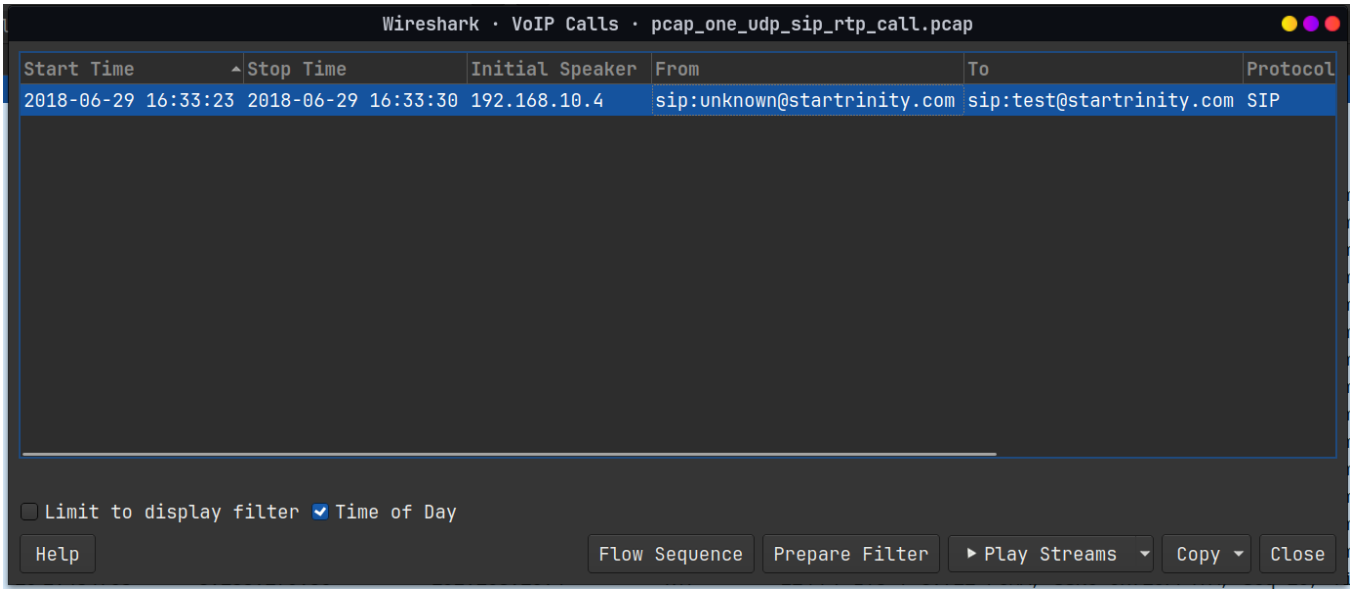


Just 6 SIP endpoints are displayed as we see at the end of the screenshot Packets: 412 Displayed: 6(1.6%)

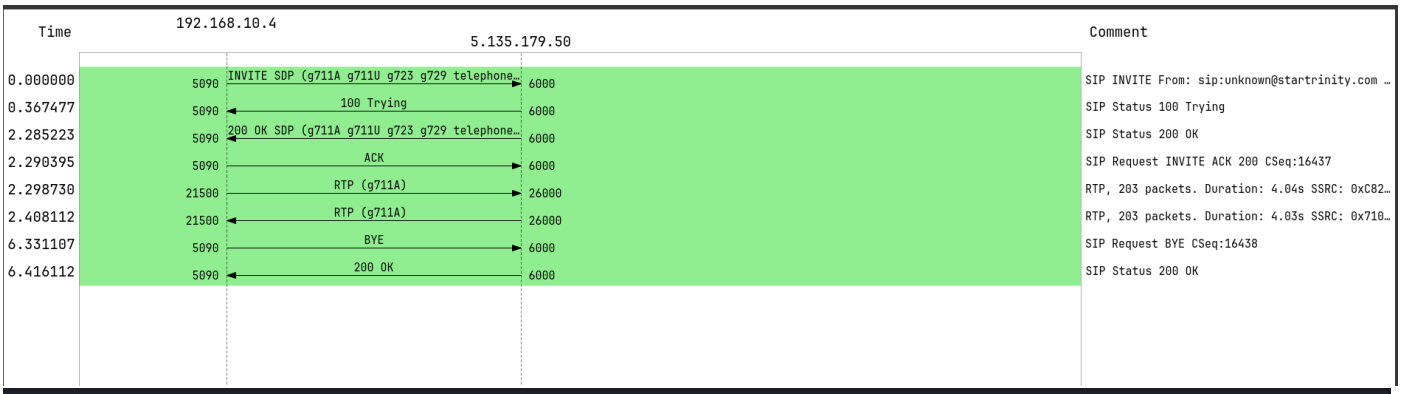


406 VoIP calls are displayed as we see at the end of the screenshot Packets: 412 Displayed: 406(98.5%)

Task2.3: -


Wireshark · VoIP Calls · pcap_one_udp_sip_rtp_call.pcap
Start Time
Stop Time
Initial Speaker
From
To
Protocol
2018-06-29 16:33:23
2018-06-29 16:33:30
192.168.10.4
sip:unknown@startrinity.com
sip:test@startrinity.com
SIP
Limit to display filter
Time of Day
Help
Flow Sequence
Prepare Filter
Play Streams
Copy
Close

Task2.4: -



Wireshark · Follow SIP Stream (sip.Call-ID == "1f9a96a6620a440ea9f726d0e3746af5") · pcap_one_udp_sip_rtp_call.pcap

```
INVITE sip:test@startrinity.com SIP/2.0
Via: SIP/2.0/UDP 192.168.10.4:5090;rport;branch=z9hG4bKPj2b96d5618c914b4db700999c6ace9ec6
Max-Forwards: 70
From: sip:unknown@startrinity.com;tag=0e7c9d8229054c1384dc7dec84da8d95
To: sip:test@startrinity.com
Contact: <sip:unknown@192.168.10.4:5090>
Call-ID: 1f9a96a6620a440ea9f726d0e3746af5
CSeq: 16437 INVITE
Allow: INFO, PRACK, SUBSCRIBE, NOTIFY, REFER, INVITE, ACK, BYE, CANCEL, UPDATE
Supported: 100rel, timer
User-Agent: StarTrinity.SIP 2018-06-14 19.29 UTC
Session-Expires: 72000;refresher=uas
Content-Type: application/sdp
Content-Length:   291

v=0
o=- 3739282403 3739282403 IN IP4 192.168.10.4
s=o1.proxy.stream0
c=IN IP4 192.168.10.4
t=0 0
m=audio 21500 RTP/AVP 8 0 4 18 101
a=rtpmap:8 PCMA/8000
a=rtpmap:0 PCMU/8000
a=rtpmap:4 G723/8000
a=rtpmap:18 G729/8000
a=sendrecv
a=rtpmap:101 telephone-event/8000
a=fmtp:101 0-15
SIP/2.0 100 Trying
Via: SIP/2.0/UDP 192.168.10.4:5090;rport=5090;received=87.117.173.127;branch=z9hG4bKPj2b96d5618c914b4db700999c6ace9ec6
Call-ID: 1f9a96a6620a440ea9f726d0e3746af5
From: <sip:unknown@startrinity.com>;tag=0e7c9d8229054c1384dc7dec84da8d95
To: <sip:test@startrinity.com>
CSeq: 16437 INVITE
Supported: 100rel, timer
Content-Length:  0

SIP/2.0 200 OK
Via: SIP/2.0/UDP 192.168.10.4:5090;rport=5090;received=87.117.173.127;branch=z9hG4bKPj2b96d5618c914b4db700999c6ace9ec6
Call-ID: 1f9a96a6620a440ea9f726d0e3746af5
From: <sip:unknown@startrinity.com>;tag=0e7c9d8229054c1384dc7dec84da8d95
To: <sip:test@startrinity.com>;tag=7d669b078fe64689b403338d6d73ee46
```

Packet 1. 3 client pkts, 3 server pkts, 3 turns. Click to select.

Entire conversation (3,238 bytes) | Show data as ASCII | Stream 0

Find: | Find Next


```
BYE sip:test@5.135.179.50:6000 SIP/2.0
Via: SIP/2.0/UDP 192.168.10.4:5090;rport;branch=z9hG4bKPj487d69b4835c46059705d65707e00950
Max-Forwards: 70
From: sip:unknown@startrinity.com;tag=0e7c9d8229054c1384dc7dec84da8d95
To: sip:test@startrinity.com;tag=7d669b078fe64689b403338d6d73ee46
Call-ID: 1f9a96a6620a440ea9f726d0e3746af5
CSeq: 16438 BYE
Content-Length: 0

SIP/2.0 200 OK
Via: SIP/2.0/UDP 192.168.10.4:5090;rport=5090;received=87.117.173.127;branch=z9hG4bKPj487d69b4835c46059705d65707e00950
Call-ID: 1f9a96a6620a440ea9f726d0e3746af5
From: <sip:unknown@startrinity.com>;tag=0e7c9d8229054c1384dc7dec84da8d95
To: <sip:test@startrinity.com>;tag=7d669b078fe64689b403338d6d73ee46
CSeq: 16438 BYE
Content-Length: 0
```

Scenario 3: Password Cracking using HashCat and John the ripper tools

---

Task3.1: -

```
┌──(kali㉿kali)-[~/Desktop]
└─$ curl -L "https://drive.google.com/uc?export=download&id=1BaGW_9c1_KWRzRehcvW_LJj0lYJtV66c" -o simple_hash.txt
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
  0     0    0     0    0     0      0      0 --:--:-- --:--:-- --:--:--     0
100   170  100   170    0     0    124      0  0:00:01  0:00:01 --:--:--   281

┌──(kali㉿kali)-[~/Desktop]
└─$ cat simple_hash.txt
203ad5ffa1d7c650ad681fdff3965cd2
bd1d7b0809e4b4ee9ca307aa5308ea6f
e99a18c428cb38d5f260853678922e03
8afa847f50a716e64932d995c8e7435a
3b03c7ea09871a75dce2e403ef28111f

┌──(kali㉿kali)-[~/Desktop]
└─$
```

```
┌──(kali㉿kali)-[~/Desktop]
└─$ curl -L "https://drive.google.com/uc?export=download&id=19YtGKWfACX6pibwtHMtx25JT_hEuUm6Q" -o complex_hash.txt
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
  0     0    0     0    0     0      0      0 --:--:-- --:--:-- --:--:--     0
100   168  100   168    0     0    126      0  0:00:01  0:00:01 --:--:--   257

┌──(kali㉿kali)-[~/Desktop]
└─$ cat complex_hash.txt
8a24367a1f46c141048752f2d5bbd14b
4ece57a61323b52ccffdbef021956754
78d8707579eab0695d5eaf80b072df14
b2d5d613de0611a5e71110c381dc63dc
7e62797fbcd4b3e787d1364cae3cf263

┌──(kali㉿kali)-[~/Desktop]
└─$
```

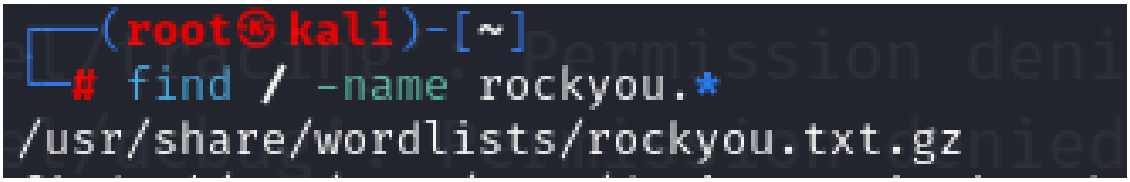
```
┌──(kali㉿kali)-[~/Desktop]
└─$ hashid < simple_hash.txt
```

```
┌──(kali㉿kali)-[~/Desktop]
└─$ hashid < complex_hash.txt
```

MD5 is the algorithm which is used.

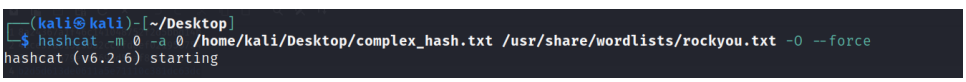
Task3.2: -

The path is /usr/share/wordlists/rockyou.txt.gz



Simple_hash: -

Complex_hash:-



Just one hash is found.

Task3.3: -

“Simple_hash.txt”: -

203ad5ffa1d7c650ad681fdff3965cd2:hello1

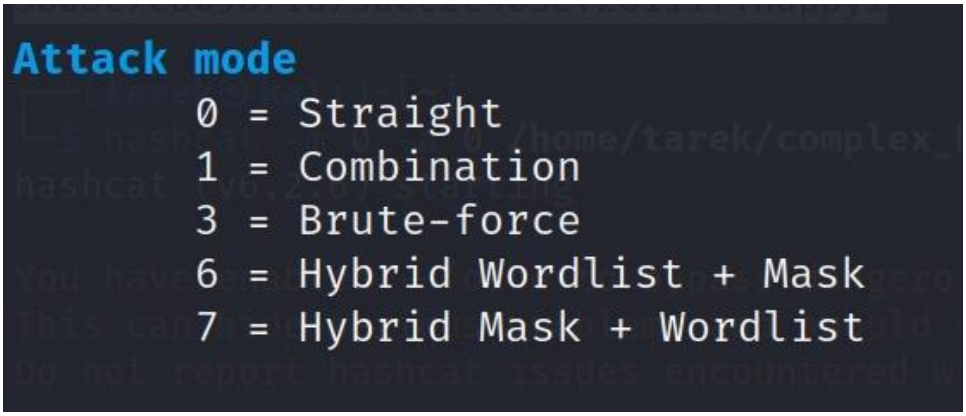
bd1d7b0809e4b4ee9ca307aa5308ea6f:mom

e99a18c428cb38d5f260853678922e03:abc123

8afa847f50a716e64932d995c8e7435a:princess

3b03c7ea09871a75dce2e403ef28111f:happy1

It was so easy and fast to crack simple_hash.txt passwords and I used -a 0 which is “straight”



“complex_hash.txt”: -

8a24367a1f46c141048752f2d5bbd14b:P@ssw0rd!

And the other hashes were not found.

It was not as fast as simple hash

And other hashes is not crackable.

Outcome of simple_hash.txt: -

```
┌──(kali㉿kali)-[~]
└─$ hashcat -m 0 -a 0 /home/kali/Desktop/simple_hash.txt /usr/share/wordlists/rockyou.txt -O --force --show
203ad5ffa1d7c650ad681fdff3965cd2:hello1
bd1d7b0809e4b4ee9ca307aa5308ea6f:mom
e99a18c428cb38d5f260853678922e03:abc123
8afa847f50a716e64932d995c8e7435a:princess
3b03c7ea09871a75dce2e403ef28111f:happy1
```

Outcome of complex_hash.txt: -

```
┌──(kali㉿kali)-[~/Desktop]
└─$ hashcat -m 0 -a 0 /home/kali/Desktop/complex_hash.txt /usr/share/wordlists/rockyou.txt -O --force --show
8a24367a1f46c141048752f2d5bbd14b:P@ssw0rd!
```

Task3.4: -

```
┌──(kali㉿kali)-[~/Desktop]
└─$ curl -L "https://drive.google.com/uc?export=download&id=1uHHxXyPzwssUlWKlBRt0jpwHK1iyM1N3" -o hash1.txt
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
  0     0    0     0    0     0      0      0 --:--:-- --:--:-- --:--:--     0
100   168  100   168    0     0    126      0  0:00:01  0:00:01 --:--:--  164k

┌──(kali㉿kali)-[~/Desktop]
└─$ cat hash1.txt
3c086f596b4aee58e1d71b3626fefc87
4913a9178621eadcdf191db17915fbcb
608f0b988db4a96066af7dd8870de96c
6e0b7076126a29d5dfcbd54835387b7b
d2feb9b6718bb374dfdd689380676954
```

```
┌──(kali㉿kali)-[~/Desktop]
└─$ curl -L "https://drive.google.com/uc?export=download&id=1JLBAaUd3wcbzAs6JRnxNYitKFmLWRTqu" -o hash2.txt
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left  Speed
  0     0    0     0    0     0      0      0 --:--:-- --:--:-- --:--:--     0
100   208  100   208    0     0    152      0  0:00:01  0:00:01 --:--:--   562

┌──(kali㉿kali)-[~/Desktop]
└─$ cat hash2.txt
59c826fc854197cbd4d1083bce8fc00d0761e8b3
7288edd0fc3ffcbe93a0cf06e3568e28521687bc
5a46b8253d07320a14cace9b4dcbf80f93dcef04
5049c40354ababd47f246f9204467548e39df6f8
23d42f5f3f66498b2c8ff4c20b8c5ac826e47146
```

MD5 is the algorithm which is used in hash1.

```
┌──(kali㉿kali)-[~/Desktop]
└─$ hashid < hash1.txt
```

SHA-1 is the algorithm which is used in hash 2

```
┌──(kali㉿kali)-[~/Desktop]
└─$ hashid < hash2.txt
```

Task3.5: -

Hash1.txt: -

```
┌──(kali㉿kali)-[~/Desktop]
└─$ john hash1.txt --format=RAW-MD5
Created directory: /home/kali/.john
Using default input encoding: UTF-8
Loaded 5 password hashes with no different salts (Raw-MD5 [MD5 256/256 AVX2 8×3])
Warning: no OpenMP support for this hash type, consider --fork=10
Proceeding with single, rules:Single
Press 'q' or Ctrl-C to abort, almost any other key for status
Almost done: Processing the remaining buffered candidate passwords, if any.
Proceeding with wordlist:/usr/share/john/password.lst
a1b2c3           (?)
flower           (?)
unix             (?)
Proceeding with incremental:ASCII
john123          (?)
rockstar         (?)
5g 0:00:01:01 DONE 3/3 (2023-12-24 14:34) 0.08110g/s 55177Kp/s 55177Kc/s 55200KC/s rockepon..rockstay
Use the "--show --format=Raw-MD5" options to display all of the cracked passwords reliably
Session completed.

┌──(kali㉿kali)-[~/Desktop]
└─$ john hash1.txt --format=RAW-MD5 --show
?:a1b2c3
?:unix
?:flower
?:john123
?:rockstar

5 password hashes cracked, 0 left
```

Hash2.txt: -

```
┌──(kali㉿kali)-[~/Desktop]
└─$ john hash2.txt --format=RAW-SHA1
Using default input encoding: UTF-8
Loaded 5 password hashes with no different salts (Raw-SHA1 [SHA1 256/256 AVX2 8x])
Remaining 2 password hashes with no different salts
Warning: no OpenMP support for this hash type, consider --fork=10
Proceeding with single, rules:Single
Press 'q' or Ctrl-C to abort, almost any other key for status
Almost done: Processing the remaining buffered candidate passwords, if any.
Proceeding with wordlist:/usr/share/john/password.lst
Proceeding with incremental:ASCII
```

```
┌──(kali㉿kali)-[~/Desktop]
└─$ john hash2.txt --format=RAW-SHA1 --show
?:cookie
?:test123
?:flower

3 password hashes cracked, 2 left
```

Task3.6: -

Hash1.txt: -

3c086f596b4aee58e1d71b3626fefc87:a1b2c3

4913a9178621eadcdf191db17915fbcb:unix

608f0b988db4a96066af7dd8870de96c:flower

6e0b7076126a29d5dfcbd54835387b7b:john123

d2feb9b6718bb374dfdd689380676954:rockstar

```
┌──(kali㉿kali)-[~/Desktop]
└─$ john hash1.txt --format=RAW-MD5 --show
?:a1b2c3
?:unix
?:flower
?:john123
?:rockstar

5 password hashes cracked, 0 left
```

Hash2.txt: -

59c826fc854197cbd4d1083bce8fc00d0761e8b3:cookie

7288edd0fc3ffcbe93a0cf06e3568e28521687bc:test123

5a46b8253d07320a14cace9b4dcbf80f93dcef04:flower

5049c40354ababd47f246f9204467548e39df6f8: NOT FOUND

23d42f5f3f66498b2c8ff4c20b8c5ac826e47146: NOT FOUND

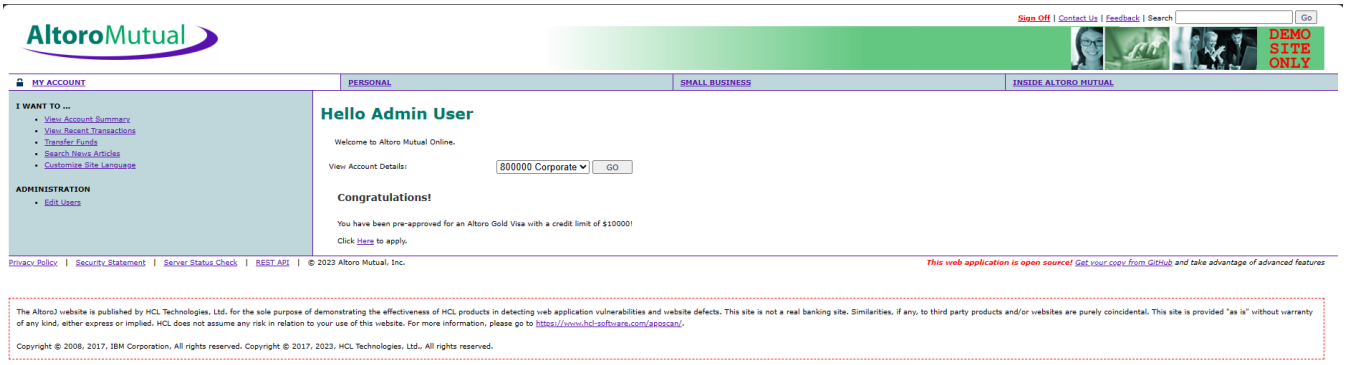
```
┌──(kali㉿kali)-[~/Desktop]
└─$ john hash2.txt --format=RAW-SHA1 --show
?:cookie
?:test123
?:flower

3 password hashes cracked, 2 left
```

The passwords were easy to crack since they were popular words and sequences.

The last 2 hashes in hash2.txt couldn't be cracked using john the ripper

Scenario 4: Manual SQL injection

Task4.1: -



Task4.2: -

Transaction ID	Transaction Time	Account ID	Action	Amount
12832	2023-12-24 13:48	800001	Deposit	$1000.00
12831	2023-12-24 13:48	800000	Withdrawal	-$1000.00

Task4.3: -

1. The website is vulnerable to SQL injection

a- Injection can have severe impacts on a system. An attacker may manipulate input to execute unauthorized SQL commands, leading to data exposure, modification, or even deletion

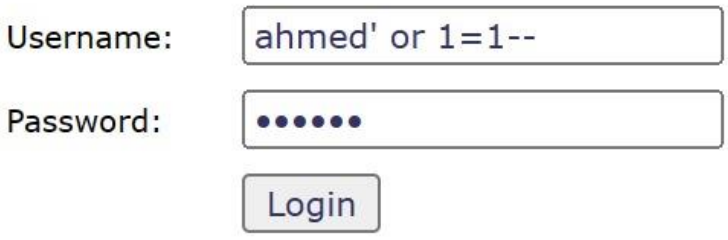
b- Parameterized queries, and prepared statements can help mitigate SQL injection risks.

2. Username: ahmed' or 1=1--

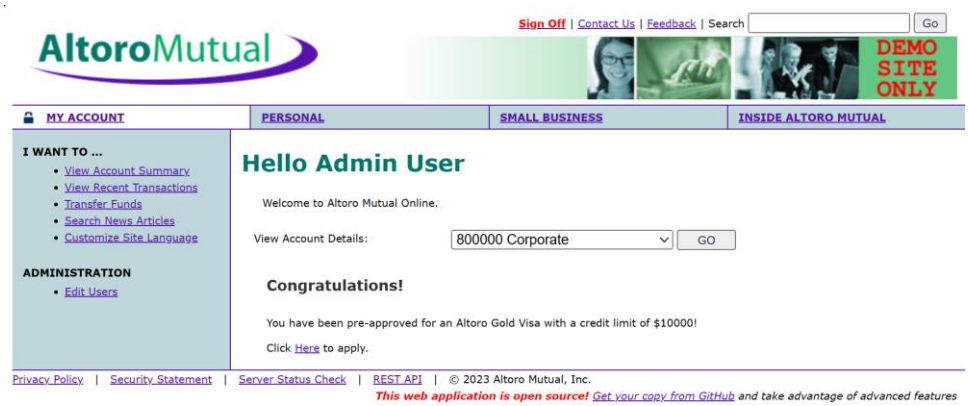
Password: anypasswordcanwork

SELECT * FROM users WHERE username='ahmed ' or 1=1-- 'and password='anypasswordcanword'.

-- character ignores the part after its position. So the query only checks the username and the attacker will gain access to the admin account.



3.

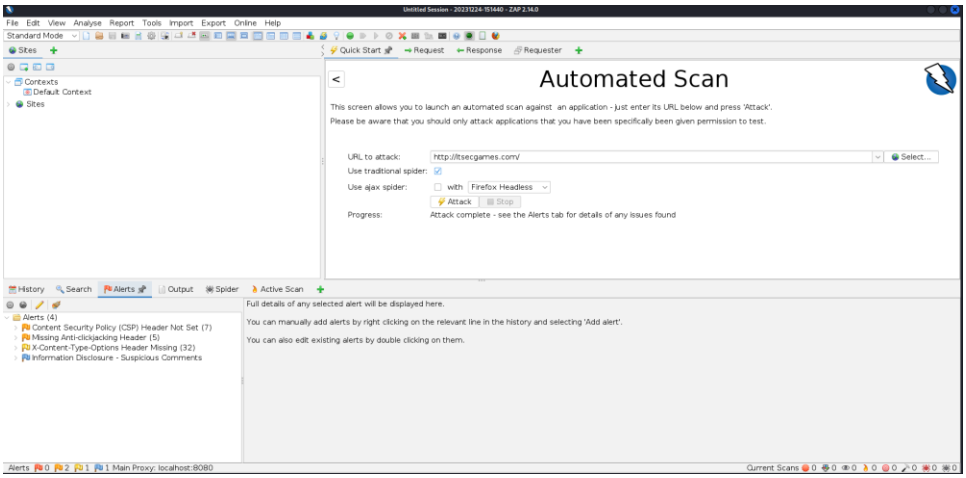


Scenario 5: Running pen-tests on a website using ZAP

Task5.1: -

1. Active scanning in Zed Attack Proxy (ZAP) involves using a traditional spider to crawl through a target application. After configuring ZAP and the browser proxy settings, the spider is launched to explore the application's structure. Once the spidering is complete, automated scanning is initiated, actively probing for vulnerabilities based on the identified structure. The results are then reviewed, categorizing vulnerabilities by severity.

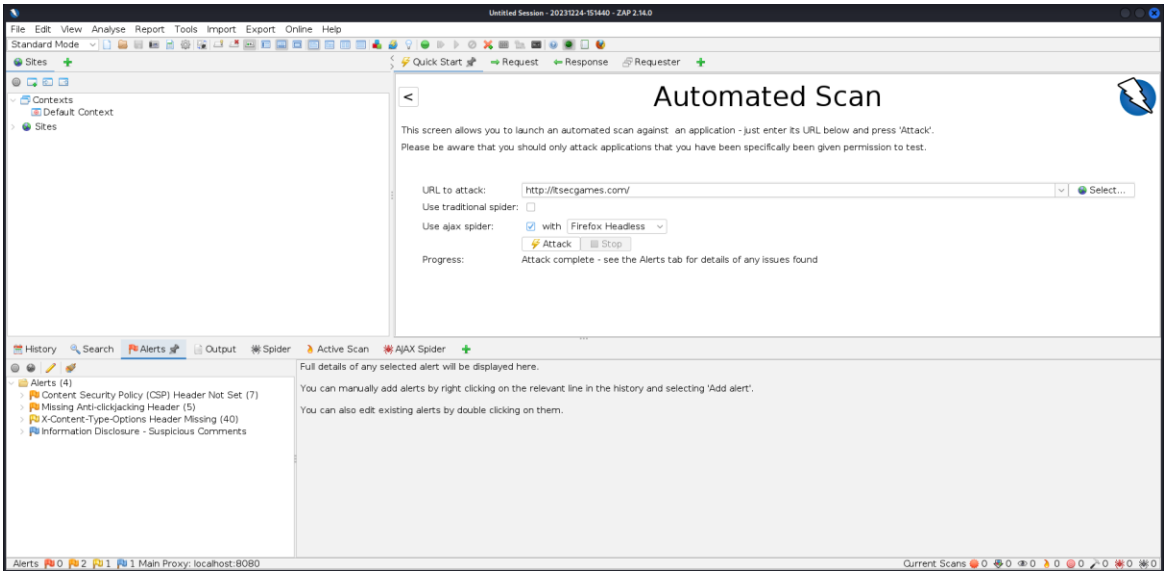
ZAP allows for the generation of detailed reports, aiding in the analysis and remediation of security issues. It is crucial to perform such scans with proper authorization and adhere to ethical hacking guidelines to ensure responsible and legal practices.

2. 

Task5.2: -

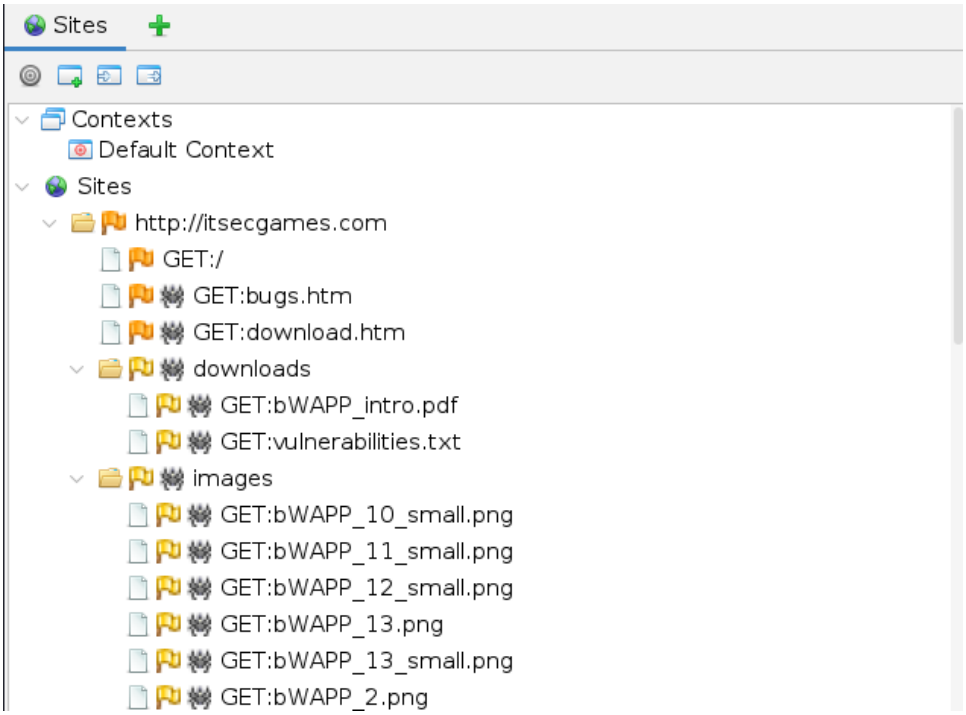
1. To perform automated scanning with the Ajax Spider in Zed Attack Proxy (ZAP), begin by configuring ZAP and setting up the browser to proxy through it. In the Ajax Spider tab, specify the target URL and initiate the dynamic crawling process, allowing the tool to handle asynchronous requests and discover dynamic content, including JavaScript-driven interactions. Once the spidering is complete, move to the Automated Scan tab, configure the scan settings, and commence the automated scanning process. ZAP will actively send requests, leveraging insights from the Ajax Spider, to identify and assess vulnerabilities in the target application. Review the comprehensive scan results and generate detailed reports using ZAP. It is essential to conduct these scans with

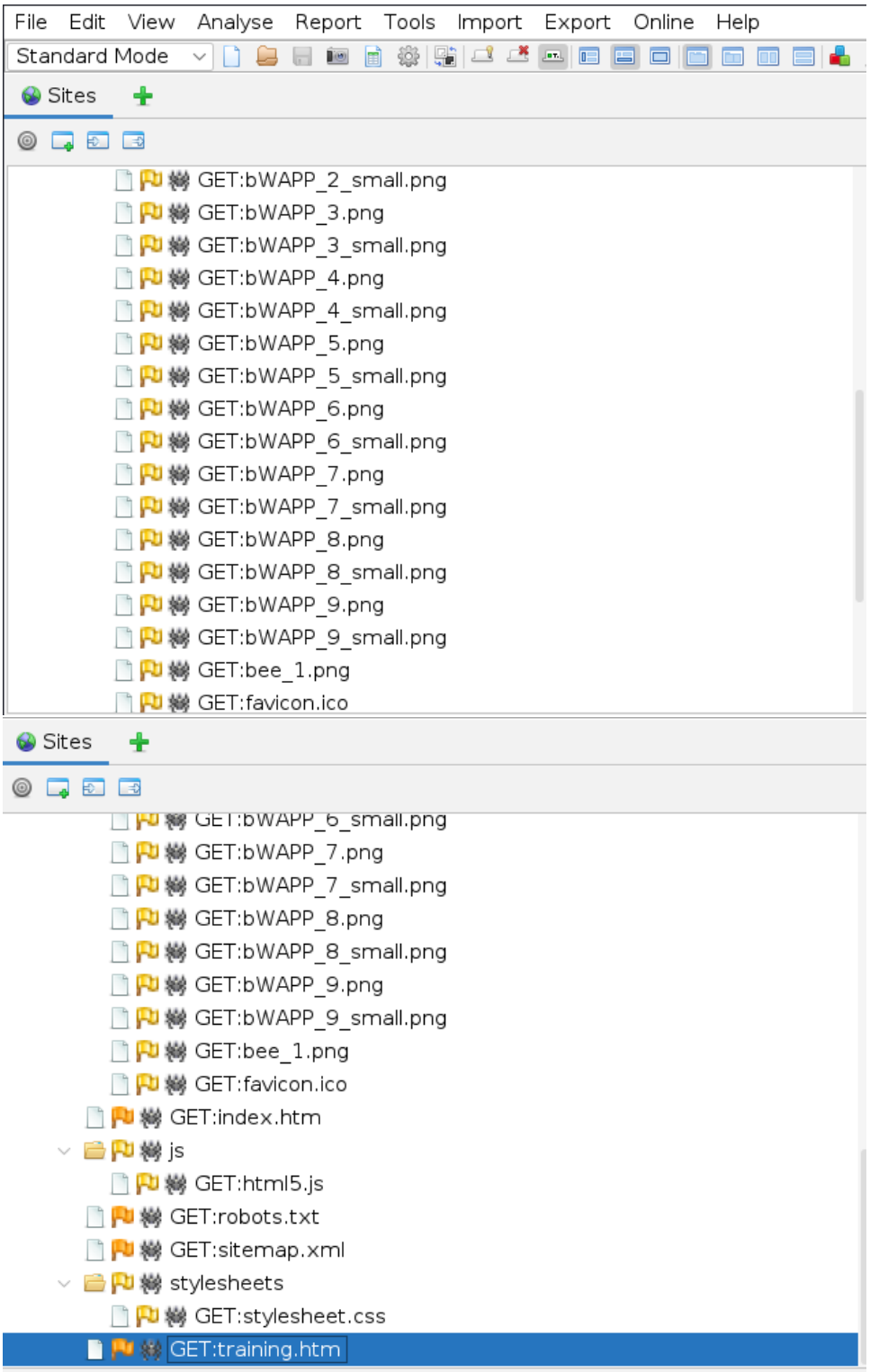
proper authorization and adhere to ethical hacking practices to ensure responsible and lawful security testing.

2. 

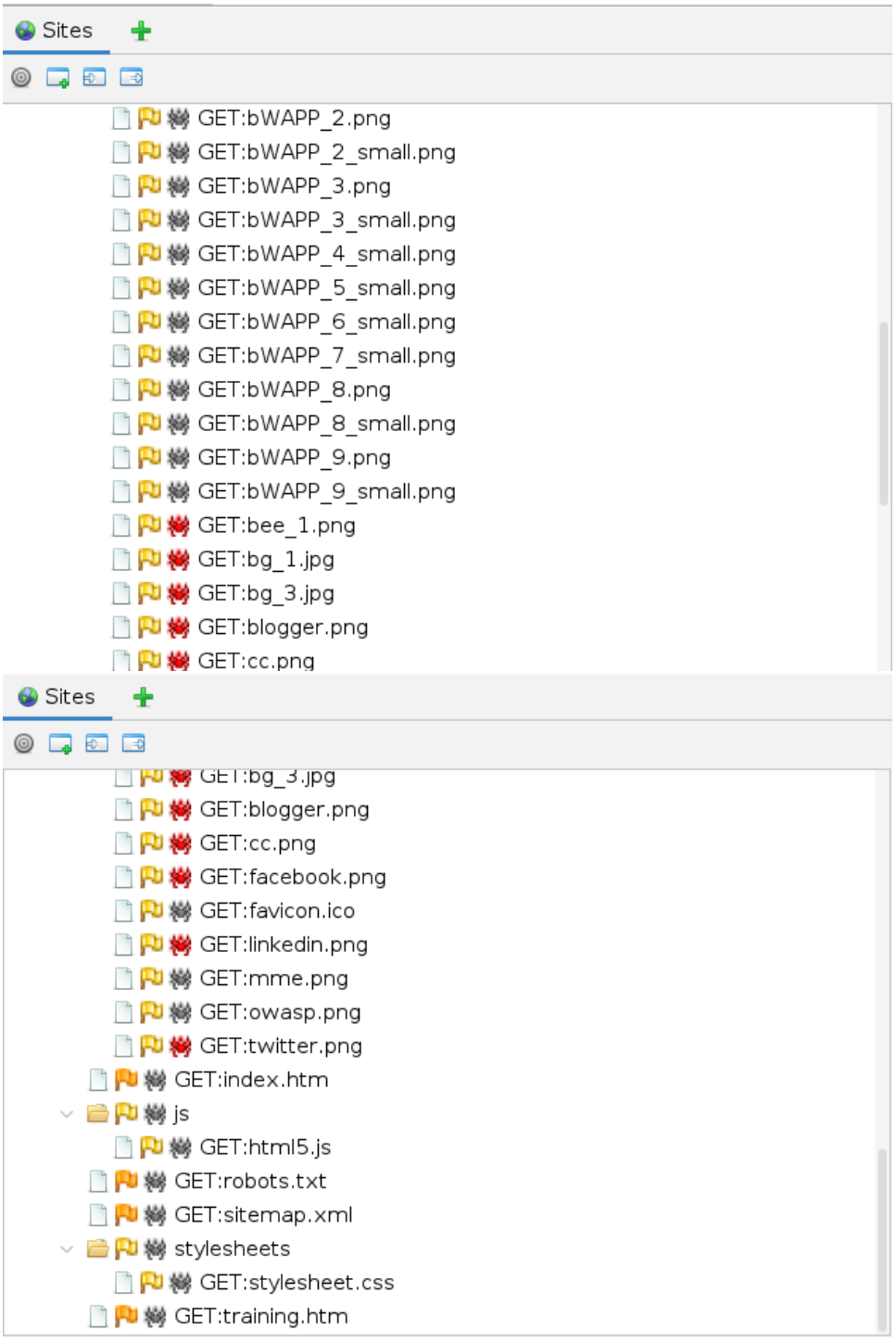
Task5.3: -

1. Traditional spider tree




File Edit View Analyse Report Tools Import Export Online Help
Standard Mode
Sites
GET:bWAPP_2_small.png
GET:bWAPP_3.png
GET:bWAPP_3_small.png
GET:bWAPP_4.png
GET:bWAPP_4_small.png
GET:bWAPP_5.png
GET:bWAPP_5_small.png
GET:bWAPP_6.png
GET:bWAPP_6_small.png
GET:bWAPP_7.png
GET:bWAPP_7_small.png
GET:bWAPP_8.png
GET:bWAPP_8_small.png
GET:bWAPP_9.png
GET:bWAPP_9_small.png
GET:bee_1.png
GET:favicon.ico
Sites
GET:bWAPP_6_small.png
GET:bWAPP_7.png
GET:bWAPP_7_small.png
GET:bWAPP_8.png
GET:bWAPP_8_small.png
GET:bWAPP_9.png
GET:bWAPP_9_small.png
GET:bee_1.png
GET:favicon.ico
GET:index.htm
js
GET:html5.js
GET:robots.txt
GET:sitemap.xml
stylesheets
GET:stylesheet.css
GET:training.htm

2. # Ajax spider tree


Sites
GET:bWAPP_2.png
GET:bWAPP_2_small.png
GET:bWAPP_3.png
GET:bWAPP_3_small.png
GET:bWAPP_4_small.png
GET:bWAPP_5_small.png
GET:bWAPP_6_small.png
GET:bWAPP_7_small.png
GET:bWAPP_8.png
GET:bWAPP_8_small.png
GET:bWAPP_9.png
GET:bWAPP_9_small.png
GET:bee_1.png
GET:bg_1.jpg
GET:bg_3.jpg
GET:blogger.png
GET:cc.png
Sites
GET:bg_3.jpg
GET:blogger.png
GET:cc.png
GET:facebook.png
GET:favicon.ico
GET:linkedin.png
GET:mme.png
GET:owasp.png
GET:twitter.png
GET:index.htm
js
GET:html5.js
GET:robots.txt
GET:sitemap.xml
stylesheets
GET:stylesheet.css
GET:training.htm